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LIBRARY
UNIVERSITY OF NEW HAVEN

University of New Haven
Day Division
Catalog 1973-1974

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HISTORY

University of New Haven is the new name for an institution which for half a century prior to 1970 was known as New Haven College. Founded in 1920 by the Y.M.C.A. as a branch of Northeastern University, its early years were inconspicuous and its growth was slow. But it served a desperate need, functioning as a community college to provide an education for many who could not afford the time or tuition demanded by regular four-year colleges and universities. New Haven College had then, as the University of New Haven has now, a strong sense of responsibility to the community.

In 1926 the college was incorporated by an act of the Connecticut Legislature and was authorized to grant the Associate in Science Degree. At the same time an agreement was reached with Yale for the use of its classrooms and laboratories during evening hours, augmenting cramped and inadequate quarters which moved from building to building on various streets through the years. With the use of the Yale facilities the College was able to build a sound educational program in cooperation with local business and industry.

From 1941 to 1945 New Haven College administered the Official Yale University Engineering, Science, Management, and War Training Programs for New Haven County. In 1948 the College took a significant step forward with accreditation of its Associate in Science degree program by the New England Association of Colleges and Secondary Schools.

During the next decade several new programs were inaugurated. These were The Reading Center, The Division of Special Studies, and the School of Executive Development—now the Management Center. Two daytime programs for recent high school graduates were instituted: Industrial Administration, and Industrial Engineering.

In 1958 New Haven College was authorized by the Connecticut General Assembly to offer courses of study leading to the Bachelor of Science degree to both day and evening students. In 1960 the College acquired the present West Haven Campus and began a decade of rapid growth. Programs for full-time students were expanded and new courses made available in other credit and non-credit curricula. The acquisition of 28 acres of undeveloped land near the main campus in 1962 made possible construction of playing fields, tennis courts, and a new Physical Education-Auditorium Building. Most recently the University has broken ground for the construction of a new $1,600,000 library which is scheduled for completion in 1974.

The College received full accreditation in 1966 when the New England Association of Colleges and Secondary Schools accredited its Bachelor degree programs. Full accreditation has enabled the College to work more effectively towards the achievement of its principal objectives: to provide leaders and professional personnel with an understanding of important cultural and scientific progress, and to encourage students to reach the maximum of their potential.

A new and major addition to the College came in 1969 when the Graduate School was established with programs offered initially in Business Administration and Industrial Engineering. This school has undergone rapid growth, adding new programs and increasing its enrollment to its present level of more than 700 students.

In October, 1970, the Board of Governors of New Haven College voted to change the name of the institution to The University of New Haven and this action was subsequently approved by the State of Connecticut.

CALENDAR

DAY CREDIT DIVISION

Summer Session 1973

Registration period	Tuesday-Wednesday	May 29-30
Tuition due on or before	Wednesday	May 30
Classes begin	Monday	June 11
Holiday (Independence Day)	Wednesday	July 4
First term final examinations	Monday	July 16
Second term classes begin	Wednesday	July 18
Second term final examinations	Wednesday	August 22

Fall Semester 1973

*Tuition due—all students	Monday	August 13
Residence charges due	Monday	August 13
Holiday (Labor Day)	Monday	September 3
Orientation—first year students	Tuesday	September 4
Classes begin	Wednesday	September 5
Last day to ADD courses	Friday	September 14
MID SEMESTER		
Last day to DROP courses	Friday	October 26
Holiday (Thanksgiving)	Thursday-Friday	November 22-23
Registration for spring	Tuesday-Wednesday	December 4-5
Classes end	Friday	December 14
Final examinations	Saturday-Saturday	December 15-22
Last day of semester	Saturday	December 22
Commencement	Sunday	January 27

Spring Semester 1974

*Tuition due—all students	Monday	January 7
Residence charges due	Monday	January 7
Orientation—new students	Wednesday	January 16
Classes begin	Thursday	January 17
Last day to ADD courses	Friday	January 25
Holiday (Washington's Birthday)	Monday	February 18
MID SEMESTER		
Last day to DROP courses	Friday	March 15
Spring vacation	Saturday-Sunday	March 16-24
Classes resume	Monday	March 25
Holiday (Good Friday)	Friday	April 12
Registration for fall	Tuesday-Wednesday	April 16-17
Classes end	Friday	May 3
Final examinations	Saturday-Saturday	May 4-11
Last day ot semester	Saturday	May 11
Commencement	Sunday	June 9

Summer Session 1974

Registration period	Tuesday-Friday	May 28-June 7
Tuition due on or before	Friday	June 7
Classes begin	Monday	June 10
Holiday (Independence Day)	Thursday	July 4
First term final examinations	Monday	July 15
Second term classes begin	Wednesday	July 17
Second term final examinations	Wednesday	August 21

* Students admitted after August 13 (first semester) or January 7 (second semester) must register and pay tuition within ten days of Admission and in no case later than the opening day of classes.

DIVISIONS OF THE UNIVERSITY

The University of New Haven has four administrative divisions: The Day Credit Division, the Division of Continuing Education, the Graduate School, and the Management Center. Included in the Division of Continuing Education are the Evening Credit Program, the Extension Credit Programs, the Summer School, the Division of Special Studies, and the Intersession Program. All divisions of the University are coeducational.

UNDERGRADUATE CREDIT PROGRAMS — DAY

Day The degree-granting Day division offers curricula which lead to the four-year Bachelor degree and the two-year Associate degree.

Students pursuing a course of studies leading to a Bachelor of Science degree in Business Administration may elect a major in Accounting, Communications, Criminal Justice, Economics, Finance, General Management, Hotel Management, International Business, Operations Management (including Computer Concentration), Marketing, Public Administration, or Retailing.

Students pursuing a course of studies leading to a Bachelor of Science degree in Engineering may elect a program in Civil, Electrical, Industrial, Materials or Mechanical Engineering.

Students pursuing a course of studies leading to the degree of Bachelor of Industrial Technology may elect a major in Management or Computer Technology.

Students pursuing a course of studies leading to a Bachelor of Arts degree may elect a major in Art, Biology, Chemistry, Economics, English, Environmental Studies, Fire Science, History, Mathematics, World Music, Philosophy, Physics, Political Science, Psychology, Sociology, and Social Welfare. By taking a modified program in either Chemistry or Physics the student may receive a Bachelor of Science degree. A student may also elect to pursue an interdisciplinary course of study leading to a Bachelor of Arts degree in American Studies.

An Associate in Science degree may be obtained in Business Administration, Engineering Science, Law Enforcement, Correctional Administration, or Arts and Sciences.

Students pursuing a course of studies leading to an Associate in Science degree in Arts and Sciences may elect a major in Biology, Chemistry, General Studies, Commercial and Advertising Art, or Journalism.

Evening The degree-granting Evening Division offers curricula which lead to the degrees of Bachelor of Science, Bachelor of Arts, Bachelor of Industrial Technology, and Associate in Science.

DIVISIONS

UNDERGRADUATE CREDIT PROGRAMS — EVENING

A Bachelor of Science degree is offered in the following areas: Business Administration with majors in Accounting, Communications, Criminal Justice, Economics, Finance, General Management, Hotel Management, International Business, Operations Management (including Computer Concentration), Marketing, Public Administration, and Retailing; Civil, Electrical, Industrial, Materials, and Mechanical Engineering. Criminal Justice majors are Law Enforcement Administration, Forensic Science, and Correctional Administration.

The Bachelor of Industrial Technology degree is offered with options in Management and Computer Technology.

A Bachelor of Arts degree may be obtained in the following areas: Art, Biology, Chemistry, Economics, English, Environmental Studies, Fire Science, History, Mathematics, World Music, Philosophy, Physics, Political Science, Psychology, Sociology, and Social Welfare.

An Associate in Science degree is offered in the following areas: General Studies; General Management; Engineering with a major in General, Electrical, Industrial, Mechanical or Metallurgical Engineering; Criminal Justice; and Occupational Safety and Hygiene.

For further information regarding the Evening Division, see the **Evening Division Bulletin** which may be obtained at the University or write to the Director of Continuing Education.

The Graduate School currently offers programs leading to the degrees of Master of Business Administration, Master of Science in Industrial Engineering, Master of Science in Operations Research, Master of Public Administration, Master of Science in Criminal Justice, and Master of Science in Computer and Information Science.

Prospective students seeking detailed statements on any of the above graduate programs and an application blank should write or call: Dean of the Graduate School, University of New Haven, 300 Orange Avenue, West Haven, Conn. 06516, telephone (203) 934-6321, ext. 280.

This Division offers a series of professional certificate courses in engineering, business, and general areas. They are usually designed to provide supplemental knowledge and skills needed in specialized jobs in business and industry, and do not carry academic credit. Further information may be obtained by requesting separate schedules and course folders from the Director of the Division of Special Studies. Courses are approved for Veterans' Benefits.

MANAGEMENT CENTER

The purpose of the Management Center is to provide educational opportunities for those managers and administrators in industry, business, and service organizations whose needs are not met in more conventional undergraduate or graduate programs. The overall objective of the Center is to offer programs to help managers of maturity and experience meet the broader and more complex requirements of positions of greater responsibility in their organizations.

Broadly speaking, the programs of the Center are designed to meet the needs of two different levels of management, 1) that of staff and line executives at upper levels, and 2) middle management administrators. At the upper executive level the programs consist of seminars and workshops of varying lengths as needed. At the middle management level the standard format is a part-time on-campus program. Also planned are in-plant programs in which the curriculum will be specifically designed to meet individual company or industry needs. In addition there are special programs available on an ad hoc basis, either on or off campus, as required.

ACCREDITATIONS AND MEMBERSHIPS

The University of New Haven is a coeducational, non-sectarian, independent institution of higher learning chartered by the Legislature of the State of Connecticut and fully accredited by the Connecticut State Department of Education. The University holds membership in the New England Association of Colleges and Secondary Schools, the Association of American Colleges, the Connecticut Conference of Independent Colleges, the College Entrance Examining Board, and is also a member of New England and national professional organizations.

The New England Association of Colleges and Secondary Schools accredits schools and colleges in the six New England States. Membership in one of the six regional accrediting associations in the United States indicates that the school or college has been carefully evaluated and found to meet standards agreed upon by qualified educators. Colleges support the efforts of public school and community officials to have their secondary schools meet the standards of membership.

ADMISSION

Since each program of the University has its own admission requirements, these requirements are defined in detail in subsequent pages of this catalog.

In general, graduates of accredited secondary schools are eligible for admission. However, in special cases persons who have not completed their high school education may be admitted to the various divisions of the University of New Haven by meeting certain specified conditions.

In the case of adults, the University is interested in evidence of maturity and motivation as well as in formal education as prerequisites for admission.

With the exception of "auditors," students wishing to take any course, whether or not they seek a degree, must satisfy the admission requirements.

The University of New Haven welcomes the applications of students from all geographic areas, from public or private schools, and from all races, economic levels, and religions.

ADVANCED PLACEMENT

The University recognizes the program of Advanced Placement available to talented high school students, operated by the College Entrance Examination Board. Students satisfactorily completing Advanced Placement courses in high school and the final examination prepared by the Educational Testing Service may be given appropriate college credit if their courses are similar to those offered at the University of New Haven.

Advanced Placement courses are graded from 1 to 5. Credit is allowed where the grade earned is 3, 4, or 5. Credit may be given for a grade of 2 if a careful review of the test by this university determines acceptability. No credit will be allowed for a grade of 1. Students desiring to submit Advanced Placement courses for college credit should have all results of these courses and tests sent in with their application to the Admissions Office.

The University of New Haven accepts credit by examination from the College Level Examination Program (CLEP). Credit is evaluated by the Deans of each School.

PRE-PROFESSIONAL PROGRAMS

In addition to the traditional professions such as law, medicine, public service, and the ministry, more and more vocations require that students continue their training after earning the Bachelor degree. Students who wish to begin training for a profession at the graduate level should write to the university they expect to attend and ask for a statement of the entrance requirements. Prescribed programs in the major areas will be modified to meet requirements for entrance into professional programs or to meet the special needs of individual students. Such programs must be approved in writing by the appropriate department chairman and Dean.

ADMISSION OF STUDENTS TRANSFERRING FROM OTHER COLLEGES

Requirements Transfer students may apply to the University of New Haven after successfully completing one or more semesters at an accredited college. Generally speaking, transfer credit will be granted for courses in which the student has obtained a grade of "C" or better in a subject which is similar in content to one given in a major at the University of New Haven or is an acceptable elective.

In accordance with the requirements of a particular department, a student may be required to take an English or a Mathematics examination.

Transfer students who wish to fulfill the requirements for the bachelor degree or the associate degree at the University of New Haven must complete the last 30 semester hours of their program at the University of New Haven. Also, for associate degrees 12 semester hours must be in the field of specialization, and for bachelor degrees 18 semester hours must be in the field of specialization.

CREDITING EXAMINATIONS

A student who has independent knowledge of the content of an undergraduate course offered by the University may, with the approval of the respective department chairman and dean, take a special crediting examination in lieu of taking the course.

No student may take crediting examinations during the first or last semesters in which he is enrolled. To graduate he must earn at least 30 semester hours through regular course work.

ADMISSION PROCEDURE

1. Write or telephone the University for information and, if you desire, arrange for an interview. Telephone (Area Code 203) 934-6321.
2. Secure an application form from the Admissions Office of the University or from your high school guidance counselor.
3. Submit the completed application form with a $15 application fee. This fee is not refundable.
4. Request your school to submit a transcript of your secondary school record.
5. Submit College Board test scores (S. A. T.), A. C. T., or University of New Haven test scores.

REGISTRATION

Degree and Non-Degree Students There are two parts to registration: the completion of the registration forms and the payment of tuition. Both should be completed before the closing date of registration as stated in the calendar. There is a penalty fee for delaying either of these two processes beyond the closing dates of registration.

Registration dates and procedures for currently enrolled day students will be posted in advance.

Registration procedures will be mailed to new students.

New students must register in person.

A separate registration is required for each of the semesters and for the summer sessions.

Note: Day division students may register for no more than three evening courses. Any waiver of this regulation must be obtained from the appropriate dean.

CHANGES OF REGISTRATION AND SCHEDULES

Students are urged to plan their programs carefully before completing the registration forms in order to avoid the need for requesting changes. Once the registration is completed, the student is charged the Change of Registration Fee for each change he makes. The fee is payable when the student completes the form requesting the change.

STUDENT SERVICES

Recognizing the importance of non-academic activities to the development of the student, the University offers a well-rounded program of services and activities designed to make assistance available when needed and to provide outlets for maturing student interests.

COUNSELING AND HEALTH

Counseling The University of New Haven Counseling Center, located in Room 210 of the Main Building, is a non-academic Counseling Center with psychological, academic, and religious referrals. Counseling at the Center is offered in such areas as personal, marital, and domestic problems, career development, and vocational and psychological testing. By inquiring at the Counseling Center, a student will be referred to the person most qualified to discuss his problem.

In addition to the Counseling Center personnel, members of the faculty and staff reserve many hours for academic counseling.

FOREIGN STUDENTS

Foreign Student Adviser The University is fortunate in having a number of other countries represented on the campus. The Foreign Student Adviser provides special guidance when needed. An International Students Club at the University sponsors activities and trips, and the International Student Center of New Haven welcomes all foreign students to use their facilities and programs throughout the year.

Veterans Affairs The Veterans Affairs staff processes applications for VA benefits, maintains liaison for veterans with the Veterans Administration, arranges tutorial assistance when needed, and provides other supportive services for veterans attending the University.

PLACEMENT

Placement Service Requests are often received from students and employers for job placement services. Although the University does not conceive its function to be that of a public employment service, it is interested in and prepared to render placement service within the limitations of its purpose and resources. It acts as a medium of exchange of information between students and former students who desire placement, and employers seeking personnel. It is particularly interested in helping students to find positions which require college study or which lead to careers that require such education, and in assisting students to find employment related to their programs of study.

Any student, undergraduate, graduate, or alumnus of the University who desires placement should call at the office for a placement application form and at that time will receive specific information as to whom he is to contact in regard to his placement problem.

A company wishing to use the placement facilities of the University should list the job and the desired qualifications in the form of a letter. A member of the University staff will then contact the company to discuss procedure and possibilities of filling the position.

TESTING

Testing Counselors, upon request, will report and interpret to students the results of their entrance tests.

The Director of Counseling, as a professional vocational counselor, is prepared to undertake vocational testing and counseling with students requesting this service.

As a service to first semester seniors and members of the community who are planning to make application to graduate schools, a Controlled Testing Center is maintained on campus. Arrangements with the Center may be made for the administration of the Miller Analogies Test and the forwarding of the score to the graduate school of the applicant's choice.

HOUSING

On-Campus Housing The three-year old Residence is of modern design, containing 16 separate suites. Each suite consists of six double bedrooms opening out to a large living room. Each bedroom contains individual beds, desks, chests, and closets. Laundry facilities, snack bar, and common lounge are also available in the dormitory. The Residence is coeducational with men assigned to 12 suites and women assigned to four suites.

Applications will be filled in the order received. To be considered, each application for residence must be accompanied by a $100.00 room reservation deposit. The total deposit is refundable if there is no available space. If space is available, $50.00 will become a damage deposit and the remaining $50.00 will be applied toward the room rent.

The University Residence is closed during the Thanksgiving, Christmas, and Spring recesses.

Off-Campus Housing Due to the limited number of off-campus apartments and rooms in the immediate area, the University is unable to guarantee off-campus accommodations of your choice.

The University Housing Office will have listings of all University approved housing in the general area. These listings will be available in the Housing Office during the latter half of July.

In entering into an arrangement for private housing, the financial terms should be discussed and implemented by the student himself. The University is of course not responsible for these arrangements, but will make every effort to see that the student is treated fairly.

CAFETERIA

Cafeteria Two meal plans are available to all students of the University. The 15-meal plan gives the student three meals per day from Monday through Friday. The 20-meal plan offers the student three meals per day Monday through Saturday and two meals on Sunday. The meal plans offer complete, well-balanced meals for a sizeable savings as compared to buying meals for cash.

All dormitory students are required to have a meal plan and it is suggested that all off-campus residents within walking distance of the University participate in one of the two meal plans.

FINANCIAL AID

15

Approximately one-half of the students at the University receive financial assistance annually in the form of scholarships, grants, loans, bursary work, and the College Work-Study Program. Applications by returning students should be made no later than April 1 for the following year and by new students before June 1.

Financial aid is not usually available for the summer term or at mid-year. Students needing assistance will ordinarily seek employment during the summer to help defray their expenses for the following year.

Full information and applications for financial aid may be obtained from the Director of Financial Aid.

SCHOLARSHIPS AND AWARDS

Academic Scholarships A number of scholarships are awarded each year on the basis of academic achievement, financial need, evidence of self-help, and overall contribution to the University. To be eligible a student must have a cumulative Quality Point Ratio of 3.0 or better and evidence of financial need.

Donor Scholarships Many scholarship awards are available each year through the generosity of business firms, organizations, and friends of the University.

Amity Charitable Trust Fund—An annual award is made from the income of this fund to worthy students, based on ability, promise, and financial need without regard to sex, race, country of national origin, or religion. Preference is given to students whose homes are in the Greater New Haven area.

SCHOLARSHIPS AND AWARDS

Asarco-Enthone Scholarship—An award of $1,000 is given annually to a student in the field of Chemistry. The recipient must be a male citizen of the United States or Canada in good health. Selection is based on activities as well as scholarship.

Faculty Wives Club Scholarship—This award is given to a student demonstrating outstanding academic achievement as well as need for assistance.

H. B. Ives Company Scholarship Foundation—An annual award of $500 is made to a male undergraduate seeking a degree in engineering, business administration, or management. The recipient must be a resident of New Haven County.

Southern Connecticut Gas Company Scholarship—A scholarship of one-half year's tuition is sponsored by the Southern Connecticut Gas Company. This award is made annually to an inner-city resident of New Haven meeting need and academic qualifications.

The Martin Luther King, Jr. Memorial Scholarship Fund—Annual awards are available to students entering the University of New Haven who exemplify the ideals of the late Dr. Martin Luther King, Jr. A generous gift from the Guilford Human Relations Council will provide additional awards to New Haven area black students.

The New Haven Chapter of the American Society of Tool Engineers—Annual scholarships to students in mechanical engineering are provided.

The Olin Employees Fund—Full tuition scholarships are offered to sons and daughters of Olin employees meeting the standards of selection.

Virginia M. Parker Scholarship—Established by Chi Kappa Rho sorority, it is awarded annually to a freshman woman selected on the basis of scholarship, potential, and financial need.

Sales and Marketing Executives Club of New Haven—An annual award is open to a superior student in the field of sales and marketing.

Woman's Seamen's Friend Society of Connecticut—Assistance is offered to sons and daughters of merchant seamen of Connecticut and to students preparing for careers in the maritime industry.

Yale University—The scholarship plan for sons and daughters of faculty and staff members of Yale University provides scholarship grants to qualified students.

Grants The University awards a limited number of grants to students who have demonstrated academic promise and financial need, while at the same time contributing substantially to some area of University activity.

Students with extreme needs may qualify for grants of from $200 to $1,000 annually under the Educational Opportunity Grants Program of the Federal government. These grants, matched by other University assistance, are designed to make possible higher education for capable applicants who would otherwise be unable to attend.

Many states and organizations offer scholarships and grants for which UNH students may be eligible. It is suggested that entering students, especially, become aware of any such opportunities for assistance.

National Direct Student Loans This program was established by the Higher Education Amendments of 1972 replacing the former National Defense Student Loan Program. Funds are available for loans of up to $1,000 annually to needy students with satisfactory academic records. Loans are repayable starting nine months after graduation at three percent simple interest.

United Student Aid Fund This private, non-profit service corporation provides long term, low interest loans to upperclassmen in good standing. Guaranty funds were provided by a donation of the Day Student Council in order for the University to participate.

Guaranteed Loan Programs The State of Connecticut and many other states have established Higher Education Loan Programs offering long term loans at low interest rates. In Connecticut, a student may borrow up to a maximum of $1,500 each school year, repayable starting one year after graduation. Based on a need analysis, Federal interest benefits may cover full interest while in attendance.

Institute of Electrical and Electronic Engineers

The Connecticut Section of the Institute of Electrical and Electronic Engineers Student Loan Fund offers non-interest bearing loans to senior students in Electrical Engineering.

Additional Loans Loan assistance to students in temporary financial difficulty is available through the Roy M. Jenkins Jr. Memorial Fund and The C. L. Robertson Emergency Loan Fund. Both of these are administered by the Financial Aid Office.

LOANS

Loans The Omnibus Crime Control and Safe Streets Act of 1968 established the Law Enforcement Student Loan Program which makes available ten year, interest bearing (7%) notes of up to $1,800 per academic year to full-time students enrolled in undergraduate and graduate programs leading to degrees in areas directly related to law enforcement. These loans can be canceled at the rate of 25% for each year of employment in a public State, Local, or Federal law enforcement agency.

LAW ENFORCEMENT ASSISTANCE PROGRAMS

Grants Grants are available to full-time employees of a publicly funded law enforcement agency under the Law Enforcement Student Grant Program. Payments up to $300 per semester are provided to full-time or part-time students working toward a degree in this field. A recipient must agree to remain with a law enforcement agency for two years after completion of studies funded by this grant.

Financial need and academic qualifications will be considered in selection of candidates.

STUDENT EMPLOYMENT

College Work-Study Program This federal assistance program is designed to enable students having financial need to work both during the summer and through the school year, thus earning a substantial portion of their college expenses. Work assignments are made on campus and also with public and private non-profit agencies such as the YMCA, YWCA, Benhaven, New Haven Boys' Club, and the Connecticut Department of Youth Services.

Bursary Work The University provides many jobs on campus for deserving students who may benefit from this type of employment. Awards are made each semester of approximately $350 for working an average of 12 hours a week.

STUDENT ACTIVITIES

Student Councils Separate Day and Evening student councils have the responsibility for initiating, organizing, and carrying through extra-curricular activities and for performing liaison functions between students and the University staff.

CLUBS

Clubs and Organizations There are almost 40 University student clubs and societies open to interested students. Included are student chapters of professional societies, religious organizations, social groups, and special interest clubs.

Athletics The University offers a wide range of opportunities to its students as participants or spectators in a comprehensive athletic program.

The Athletic Department has received national recognition with its teams participating in many regional and national championships. The University is a member of the Eastern College Athletic Conference (ECAC), the National Collegiate Athletic Association (NCAA), and the New England College Athletic Conference (NECAC).

The University competes in both varsity and junior varsity athletics in baseball, basketball, hockey, soccer, cross country, golf, and tennis. In addition to the intercollegiate athletic program, a year-round schedule of intramural athletics is open to all students and includes special programs for women. Student organized teams participate on a club level in football and lacrosse, with contests against other area colleges.

Fraternities and Sororities Many national and local service, social, and honorary fraternities and sororities are active on campus. They sponsor programs such as the semi-annual Bloodmobile and other services, as well as social functions.

Publications Student publications include **The News,** the University student newspaper; **The Chariot,** the annual yearbook; the **Noiseless Spider,** a literary publication, and the **Student Handbook.** Any student may volunteer his services on any of the student publications.

Social Activities The social calendar is filled with varied events to appeal to all students: mixers, concerts with large and small name attractions, weekly films, free parties to climax each semester, special cultural events, including Non-Western Music Week, Homecoming, and several major drama productions.

FM Radio Station WNHU, 88.7 MHZ, is the University's student-operated FM radio station. Located in the Student Center, the 1,700 watt station serves the Student Body and the greater New Haven community. All work and management is done by students and any student may volunteer his help.

THE STUDENT CENTER

The Student Center The Student Center provides a focal point for all student activities. Offering lounges, student offices, a game room, a large cafeteria and a snack bar, the facility has been designed to serve as a center for the student's non-academic college interests.

Special art showings and concerts are presented throughout the year. Seminars planned by students and faculty together are held at frequent intervals. Periodically, the President of the University and the Dean of Students meet informally with students to discuss all phases of life at the University.

ASSEMBLIES

Assemblies Assemblies and lectures are held throughout the academic year; notable speakers are presented at frequent intervals.

BOOKSTORE

Bookstore A recent addition to the campus, the University bookstore offers new and used text materials, art and engineering supplies, and a large variety of University emblemed gift items.

STUDENT HEALTH SERVICES

Physical Examination Students are requested to provide a report of a recent physical examination to the Health Service upon acceptance. This is so the Health Service will have available past medical history, in case of emergency. Appropriate forms for this purpose are provided.

Infirmary The Infirmary, located in the Residence, is available for emergency first aid treatment and examination for all students, without charge. Day beds are provided for rest and care of mild illnesses for students living in University approved housing. The University Health Staff, under the direction of the Director of Housing and Student Center, includes the University internists, nurses, psychiatrists, and psychologist.

INSURANCE

Accident and Health Insurance The University of New Haven Student Insurance Plan is another important service to full-time students and their families. It was conceived and planned by the Student Council and is designed to help full-time students of the University meet unexpected and very often, costly medical bills arising from an accident or when hospital and medical services are required due to sickness.

The Plan provides protection while the student is at home, at school, or on vacation, 24 hours a day for a full twelve months. Benefits are payable in addition to those the student may receive from any other policy. Details of the Plan are available in a folder sent to all full-time students or from the University nurse.

LIBRARY

The Library contains more than 75,000 volumes, over 2,000 LP's, extensive corporation annual reports, pamphlet files, and microfilm. About 900 periodicals and extensive back-issue files are maintained.

The resources of the New Haven and West Haven Public Libraries are available to students (non-resident must pay a fee). Under a reciprocal policy, students may charge material from Albertus Magnus and Quinnipiac libraries by presenting their validated ID's.

ALUMNI ASSOCIATION

Membership in the Alumni Association is acquired immediately upon graduation. A member of the administrative staff of the University serves as Director of Alumni Relations. An Executive Committee conducts the affairs of the Association during the period between annual meetings and also serves as a planning group. There is an alumni fund chairman for annual giving.

In addition to the annual meeting, other meetings of social and educational interest occur during the year, and a quarterly publication, the **Alumni News,** is mailed without charge to each alumnus.

The Alumni Association is represented on the Board of Governors by the election of a member to the Board for a term of two years. The president of the Association serves on the Board of Governors as an ex-officio member.

ALUMNI ADVISORY COUNCIL

Membership on the Alumni Advisory Council is by invitation. Twenty distinguished graduates of the University presently constitute the group. The Council is an advisory board to the University in the conduct of alumni affairs. Its primary objectives are to strengthen alumni relations, advise on matters of top-level policy involving the alumni, improve communications with them, and assist in planning and conducting alumni events. The Council meets quarterly at the University with the President of the University and the Director of Alumni Relations.

SCHOLASTIC REGULATIONS

GRADING SYSTEM

Grading System The following grading system is in use and except where otherwise specified applies both to examinations and to term work. The weight of a final examination grade is a matter individually determined by each instructor.

A Superior

B Good

C Fair

D Lowest passing grade

F Failure or withdrawal after midpoint with unsatisfactory work

Inc. Incomplete. Indicates that some work remains to be completed. Such work must be made up within six months to remove the "incomplete," or a longer period may be granted on the request of the instructor who gave the student the "incomplete." Otherwise, the "Inc." remains on the student's record for one semester, after which the "Inc." is changed to "F" and no credit is given for the course.

W Withdrawal. Indicates either (1) withdrawal prior to the midpoint of semester or (2) withdrawal after the midpoint of semester and work satisfactory at that time.

S Satisfactory. Given only in non-credit courses.

U Unsatisfactory. Given only in non-credit courses.

Full-time students must complete a minimum of 12 credits per semester to retain their status as full-time students. Completion is defined as receipt of a letter grade (A to F) as opposed to W or Incomplete. A student who loses his full-time status will be placed on probation. The student will be required to contact the Director of Admissions requesting readmission for the following semester.

The Director of Admissions is Chairman of the Academic Standing and Admissions Committee. All requests for readmission must be approved by the Academic Standing and Admissions Committee.

A student may not register for more than 18 semester hours in any one semester without the written permission of the Dean of his School (19 semester hours for certain engineering programs). In most instances a student will be required to achieve a cumulative quality point ratio of 3.2 in order to register for more than 18 semester hours in any one semester.

Grade Reports Reports of the final grade in each subject will be mailed to the student soon after the close of each semester. The same report will be mailed to employers in those instances where the student has given his approval.

GRADE REPORTS

Academic Standards The academic standing of each student will be determined on the basis of his quality point ratio each semester.

ACADEMIC STANDARDS

In order to determine quality point ratios, each letter grade is assigned a quality point value:

A	4 quality points
B	3 quality points
C	2 quality points
D	1 quality points
F	0 quality points

The quality point ratio for all students is obtained by multiplying the quality point value of each grade by the number of semester hours of the course, then dividing the total quality points by the total semester hours.

Students are required to maintain a quality point ratio in accordance with the following scale:

Quality point ratio of 1.50 for 3-30 semester hours attempted
of 1.60 for 31-45 semester hours attempted
of 1.70 for 46-60 semester hours attempted
of 1.80 for 61-75 semester hours attempted
of 1.90 for 76-90 semester hours attempted
of 2.00 for 91 or more semester hours attempted

Failure to earn the required cumulative quality point ratio will place a student on academic probation for the following semester of enrollment. A student is automatically dismissed when he receives a third probation or when his quality point ratio for any one semester is less than 1.00.

PROBATION

Transfer Students Academic probation for transfer students is determined in accordance with the same graduated scale as for non-transfer students. In determining a transfer student's academic standing, his total semester hours (those received at another college plus those at the University of New Haven) are applied to the graduated scale. However, only the cumulative average earned at the University of New Haven is considered in determining the student's academic standing.

TRANSFER STUDENTS

READMISSION

Readmission Application for readmission after a student has been dismissed will be considered only after the lapse of a semester and only when the student provides evidence which indicates his probable success if readmitted.

Requests for readmission should be submitted in writing to the Chairman of the Academic Standing and Admissions Committee at least three weeks before the opening of the semester and should include evidence supporting the student's belief that he will succeed if readmitted.

Readmission is not automatic. Each request is reviewed by the Committee on Academic Standing. The Director of Admissions is Chairman of the Academic Standing and Admissions Committee.

DEAN'S LIST

Dean's List Full-time students who earn a quality point ratio of 3.20 or better in any one semester will be placed on the Dean's List.

All part-time students who have accumulated a minimum of 14 semester hours at the University will automatically be considered for the Dean's List at the end of each semester. A cumulative quality point ratio of 3.20 or better is required.

DEGREES

The Baccalaureate or Associate degree will be conferred at Commencement when the student has met all the requirements of his program and has met the following University requirements:

1. Has earned a cumulative quality point ratio of at least 2.00.
2. Has been recommended by the faculty.
3. Has met all financial obligations.
4. Has completed the last 30 semester hours at the University of New Haven.

HONORS

Honors may be conferred upon candidates for graduation who have completed at least 60 semester hours of work at the University of New Haven in their junior and senior years. The following standards shall be used:

1. The bachelor degree **Cum Laude** may be awarded to a student whose cumulative quality point ratio is at least 3.25 at the end of the first semester of his senior year and who continues to attain the same standard for the remainder of the year.

BACHELOR DEGREES WITH HONORS

2. The bachelor degree **Magna Cum Laude** may be awarded to a student whose cumulative quality point ratio is at least 3.50 at the end of the first semester of his senior year and who continues to attain the same standard for the remainder of the year, whose quality point ratio in all courses counting toward his major is at least 3.50, and who has completed all the suggested courses within his curriculum.

3. The bachelor degree **Summa Cum Laude** may be awarded to a student whose cumulative quality point ratio is at least 3.70 at the end of the first semester of his senior year, who continues to attain the same standard for the remainder of the year, whose quality point ratio in all courses counting toward his major is at least 3.70, and who has completed all the suggested courses within his curriculum.

ASSOCIATE IN SCIENCE DEGREE WITH HONORS

A degree **With Honors** is awarded to students who have a quality point ratio of 3.25 for the semester hours specifically required for the degree program from which they are being graduated, and who have taken 30 or more hours of required work at this university.

Transfer students will be awarded honors on the same basis, with the provision, however, that their total average will be considered only when they have an honor average for studies completed at this university.

A degree **With High Honors** is awarded to students who have a quality point ratio of 3.50 based on the same considerations as noted above.

In determining eligibility for degrees with honor, credits earned by crediting examinations and electives in excess of those required will not be considered.

ADVANCED STUDY

Advanced study courses are offered for qualified students in the departments offering the degree of Bachelor of Science or Bachelor of Arts. These courses may include a thesis, tutorial work, or independent study which permits the students to work intensively in areas of special interest.

TRANSITIONAL STUDIES

Transitional Studies has been instituted to assist students with basic skill deficiencies in obtaining a university education. The curriculum and the methods of instruction have been designed in consideration of the motivational, economic, and social problems which have hampered the progress of these students, especially those from urban areas.

Full-time students take 12 hours of regular course work each semester and 6 hours of extended course work in English and Math. These special English and Math courses run two semesters and include longer class periods and mandatory individual tutoring. Matriculation from Transitional Studies into regular college programs is based on an evaluation of the student's ability to handle the normal course requirements. Matriculating students may earn up to 18 credits which are fully transferable and can be applied towards an Associate or Bachelor degree.

TRANSFER OF CREDIT

A student with a two-year degree and at least a 2.0 QPR will receive transfer credit for as many hours as the degree requires.

No more than 60 semester hours from a two-year college will be accepted, except by authorization of the dean of the school in which the student is enrolled.

The maximum number of semester hours of transfer credit from any source is 90 semester hours.

It is not necessary that a transferred course correspond to one in the university catalog.

ATTENDANCE REGULATIONS

Classes are operated on the policy that it is necessary for all students to attend all class meetings. If a class is missed, the benefits from participation in the class discussion and instruction are completely lost. No student, regardless of ability, can afford that loss.

Evening Credit Programs A student is allowed only two absences per semester for a 3-or-4 semester hour course. If the student is absent more than twice, permission to continue in the course must be obtained from the instructor.

Day Credit Programs Attendance regulations for daytime students are outlined in the **Student Handbook.**

COURSES AVAILABLE AT OTHER COLLEGES

The University of New Haven has established policies to allow its students to take courses at Southern Connecticut State College, Albertus Magnus College, and Quinnipiac College. University of New Haven students interested in taking courses at other colleges and universities in the New Haven area should discuss this matter directly with the Dean of their School and consult the statement of policy established by the Schools of Arts and Sciences, Business Administration, and Engineering. These statements of policy are described in the sections of the catalog related to the Schools of Arts and Sciences, Business Administration, and Engineering.

INTERDISCIPLINARY PROGRAM

For students with particular needs and interests, certain departments at the University offer the opportunity for an interdisciplinary major. The student may plan a four-year program in two or more major departments. In such cases, the Dean will appoint a faculty member from each department to plan with the student a sequence of courses which most nearly satisfies his or her interests. The program will generally consist of existing courses and independent study. A minimum of 51 credits in the area of interest must be completed to satisfy the requirements for graduation. The program must be approved by the Department Chairman and forwarded to the Registrar to be filed in the student's folder.

INTERSESSION

During the Intersession, the University offers a number of courses for credit. The Intersession comes between the fall and spring semesters. The program offered during the Intersession includes both regular and special courses. The Intersession program seeks to utilize the special expertise of the faculty and to blend innovative and traditional methods of teaching such as team-teaching, field trips, laboratory work, lecturing and research projects.

SUMMER SESSIONS

The University offers summer sessions with these primary functions:

DAY AND EVENING CREDIT DIVISIONS

1. To offer opportunity for summer study to those residents of the New Haven area who attend other schools during the regular school year. For financial reasons, most of these students find it desirable to live at home and work during the summer. The summer program of the University is offered in both the Day and Evening divisions. Reasons for summer study vary, but are generally confined to the following:
   a. To make up deficiences.
   b. To satisfy prerequisites for courses in the present institution.
   c. To acquire advanced standing in the parent school.

   In general, credits earned at the University of New Haven are acceptable to parent institutions. For assurance of the acceptance of credit by the parent school, written approval of that school is required. The University of New Haven is a member of the New England Association of College and Secondary Schools and the National Association of Summer Schools.

2. To provide opportunity for summer study to the students of the University. Reasons for summer study for this group of students may be described as follows:
   a. To lighten the study load during the regular school year, but still meet the yearly requirements of the program.
   b. To shorten the normal time required for a degree.
   c. To take preparatory work.
   d. To make up deficiencies caused by failure in certain courses.
   e. To take additional work beyond the degree and yet complete a program within the normal time.

The accomplishment of any one of the five objectives listed above will depend on the specific subjects offered during any summer session.

REGISTRATION

Registration For all new students a personal interview with a staff member of the University is necessary. Registration procedures will be explained at this time. A student taking courses for transfer of credit to another institution must submit a letter of authorization from that institution with his registration. This procedure should be followed each semester regardless of previous attendance.

TRANSFER OF CREDITS

Transferring of Credits Credits may be transferred from the University of New Haven, a fully accredited university, to any other college or university, merely by obtaining a letter of authorization from the school regularly attended.

TUITION, FEES AND EXPENSES

NEW AND RE-ENTERING STUDENTS

Day Division, regular academic year 1973-1974

Application Fee Payable only once, at time of initial application. Not refundable.	$ 15.00
Acceptance Fee Payable by all new students (incoming freshmen, transfer, and former students) upon notification of acceptance. Not refundable.	35.00

TUITION

	Per semester	Per year
Tuition		
1. Full time students (12-18 hours or equivalent) in day or evening sections	$900.00	$1,800.00
2. Less than 12 credit hours in day division per credit hour $75.00		
3. Less than 12 credit hours in evening division per credit hour $40.00		
4. More than 18 credit hours or equivalent per credit hour—taken in day or evening division $40.00		
Student activity fee	20.00	40.00
Total standard tuition and fees for regular full time students for academic year 1973-1974	$920.00	$1,840.00

Note: The Student activity fee is distributed by the student government and covers the cost of student supported services such as the newspaper and the radio station, and helps defray the expenses of clubs and organizations and social activities.

OTHER CHARGES

Change of registration Assessed for changing courses or sections after the completion of registration.	$ 5.00
Late fee Assessed for failure to complete registration and/or payments before due date. All students who have not completed tuition payment by the start of the semester will be assessed an additional late fee of $5.00 plus $1.00 for each additional day thereafter.	5.00
Laboratory fees—payable each semester by students registering for courses requiring the laboratory fee. See Course Description for specific amounts. Not refundable.	
Make-up examination Assessed when a student is permitted to take an end-of-semester examination at a time other than the scheduled time, except for conflicts caused by the examination schedule.	5.00
Make-up test Assessed when a student is permitted to make up an announced test during the semester.	3.00
Auditors—The fee for a student auditor in any course or courses is the same as if the courses were taken for credit.	
Graduation fee Assessed regardless of participation in exercises; no reduction will be made for non-attendance. For graduation in June, fee is due before March 1 of year of graduation; for January commencement, due October 15 of prior calendar year.	35.00
Transcript of academic work—no charge for the first one; thereafter, per copy	1.00

Summer Terms and Evening Division

Information regarding both summer sessions and the Evening Division may be obtained from the respective schools.

RESIDENCE CHARGES

Dormitory rooms are contracted for the entire academic year excluding intersession courses. The dormitory will officially be closed during Thanksgiving, Christmas, and Spring vacation periods when classes are not in session.

ROOM DEPOSIT

A dormitory deposit is required of all students to be placed in the dormitory, and this deposit will be deducted from the spring semester room charge. The room deposit is not refundable after July 31st of the year to which it pertains.

The University assumes no responsibility for loss or destruction of any clothing or personal belongings of the student.

Room Deposit	$100.00
Room Charge Per Year	700.00*
Damage Deposit (Refundable)	50.00
Linen Charge Per Year	36.00*

MEALS

20 Meal Plan (Mon.-Sat. 3 meals per day, Sunday Brunch and Dinner) per semester	275.00*
15 Meal Plan (Mon.-Fri.) per semester	250.00*

*Residence and board charges are for the academic year September 1973 - June 1974 only. Rates are subject to changes upon due notification.

PAYMENT OF BILLS

Tuition, fees, and other charges are payable when due. Checks or money orders should be made payable to University of New Haven.

As a convenience to those who desire to spread their payments out over a period of time, a deferred education payment plan is available to full-time students and to part-time students carrying six or more credits or the equivalent. Details of this plan are available at the Business Office.

FAILURE TO PAY

The University withholds the giving of grades, the issuance of transcripts, and the granting of honorable dismissal to any student whose account is in arrears.

WITHDRAWAL DAY DIVISION

From University—Students are required to discuss their intentions with a member of the Counseling Center before officially withdrawing from the University. Forms for withdrawal are available at the Counseling Center.

From a Program—Students considering a change in program should first discuss the matter with the department chairman of the proposed new program. If it is agreed that the change is advisable, written permission will be granted. Forms for making a change are provided by the Reception Office.

Course changes—Forms are available at the Student Records Office.

WITHDRAWAL FROM THE UNIVERSITY AND REFUND OF TUITION

A. **Full-time day students**—Registration does not carry with it the right of an automatic refund of tuition in cases of withdrawal. No deduction is made for temporary absence from classes, nor is any refund made if a student is suspended or dismissed.

Note: Formal withdrawal requires that a student make an appointment with the Counseling Center in order to fill out and sign an official Total Withdrawal form that must be co-signed by a University Counselor.

1. Any student under the age of 18 must have the written consent of a parent or guardian with an indication to whom any refund, if applicable, is to be paid.
2. Tuition is refunded or canceled according to the scale below upon receipt of formal withdrawal request before the end of the fourth week of a semester.

1st Week — 80%
2nd Week — 60%
3rd Week — 40%
4th Week — 20%
After 4th Week — 0%

A pro-rated credit toward the following semester or refund may be awarded, subject to the decision of the Committee on Withdrawals, in situations involving:

(a) death or protracted illness of a student
(b) involuntary induction into military service
(c) other clearly extenuating circumstances

All requests for refund must be made in writing and include necessary documentation. The University assumes no responsibility beyond the foregoing for withdrawal occasioned by the pressures of family life or occupation.

B. **Part-time students**—Tuition only is refunded or canceled by one of two methods upon receipt of formal withdrawal request before the end of the fourth week of a semester.

1. Percentage basis for any reason during the first four weeks of a semester:

80% of semester tuition—1st week
60% of semester tuition—2nd week
40% of semester tuition—3rd week
20% of semester tuition—4th week
0% of semester tuition after 4th week

2. Pro-rata basis of tuition before end of fourth week involving:
   (a) death or protracted illness of student
   (b) involuntary induction into military service
   (c) transfer or change of work initiated by employer that precludes meeting class schedules

All requests for refund must be made in writing and include necessary documentation.
The University assumes no responsibility beyond the foregoing for withdrawal occasioned by the pressure of family life or occupation.

C. **Summer session students**—In cases of withdrawal from a course or courses within the first week of each term, a refund of 50% of tuition only is made. There is no refund of summer tuition after the first week.

The foregoing policy is intended to protect the University, since the University plans its expenses and bases its budget upon full collection of tuition and fees from all registered students, and assumes the obligation of supplying instruction and other services throughout the year.

Changes In Arrangements

The Board of Governors of the University of New Haven reserves the right to make such changes in tuition, fees, and other costs which, in its judgment, are considered necessary and just. No changes in charges will be made retroactive.

IR TOOLS

SCHOOL OF ARTS AND SCIENCES

JOHN COLLINSON, DEAN

Bachelor of Arts Degree

MAJORS IN:

AMERICAN STUDIES
ART
BIOLOGY — (3 options)
CHEMISTRY — (3 options)
FIRE SCIENCE
ECONOMICS
ENGLISH
ENVIRONMENTAL STUDIES
(4 options)
HISTORY
MATHEMATICS
WORLD MUSIC
PHILOSOPHY
PHYSICS
POLITICAL SCIENCE
PSYCHOLOGY
SOCIAL WELFARE
SOCIOLOGY

MINOR IN:

EDUCATION

Associate in Science Degree

MAJORS IN:

GENERAL STUDIES
COMMERCIAL AND
ADVERTISING ART
JOURNALISM
BIOLOGY — (several options)

ARTS AND SCIENCES

The School of Arts and Sciences offers a four-year college curriculum leading to Bachelor of Arts and Bachelor of Science degrees. Core requirements for all Bachelor programs are listed below. The requirement for graduation is 120-126 semester hours.

BACHELOR OF ARTS BACHELOR OF SCIENCE

Because some employers and some graduate schools in scientific and technical fields indicate a preference for the Bachelor of Science degree, this degree is offered in Chemistry and Biology. If the student wishes to obtain a Bachelor of Science in either major, he may do so by taking a heavier concentration in the sciences. Details of these programs are to be obtained from the department chairmen.

A student may, but need not, choose a minor in addition to his major field of study. Most minors consist of 18 hours. The student should consult his major advisor.

AMERICAN STUDIES

A Bachelor of Arts major in **American Studies** is offered jointly by the departments in Humanities and Social Sciences. This program consists of a series of interdepartmental seminars emphasizing various aspects of contemporary American civilization and culture and stresses independent reading and research by the student. For further information contact the chairman of the appropriate department.

APPLICATION TO THE PROGRAM

An applicant for admission to the Arts & Sciences Program must be a graduate of an approved secondary school or the equivalent. While no set program of high school subjects is prescribed, an applicant must meet the standard of the University in respect to the high school average and present 15 acceptable units of satisfactory work, including 9 or more units of college preparatory subjects. Satisfactory scores on College Entrance Examination Board (S.A.T.) or American College Testing Program tests (A.C.T.) are required.

MATRICULATION

Matriculation for Bachelor Degree Students who have completed at least two semesters or equivalent (30 academic credit hours) with a minimum quality point ratio of 2.00 may apply for matriculation for the Bachelor degree.

ADMISSION REQUIREMENTS

Admission will be limited to applicants who have given evidence of capacity and motivation adequate for upper division work as determined by the department chairman.

A cumulative quality point ratio of at least 2.00 is required in a Bachelor of Arts student's major field.

ART

Art Study of the visual arts provides opportunity for self-realization and gives the individual a perception of his relationship to society. The program is designed to develop sensitivity to visual materials and experiences and the psychic response to them by which the student will be led to make his own expressive statement in a variety of media. Many career opportunities exist for those who are competent in the visual arts. Among these are openings for art directors in various fields of business and industry. The program also provides excellent preparation for further study in art education, graphic art, industrial design, architecture, city planning, cinema, television, and art history.

A minimum of 30-36 semester hours in art is required for the major. Flexibility of planning is provided, but it is suggested that the students adhere to the following basic outline of courses: ART 101-102 (Introduction to Studio Art), ART 201 (Drawing and Painting I), History of Art (six semester hours), Design (six semester hours) ART 302, (Advanced Drawing) .or ART 313 (Photography), and ART 401-402 (Studio Seminar). Art majors are encouraged to elect courses in art over and above the minimum requirements.

BIOLOGY

Biology The program prepares the student for medical, dental, veterinary, or other professional training, as well as for a graduate program in biology and in allied health fields. Students in other disciplines, allied or not related, frequently choose biology as a minor area of concentration. This is particularly true for those majoring in the social and behavioral sciences.

For those not seeking specific professional specialization, employment opportunities for biologists are found in industry, federal, state, and municipal organizations, hospitals, research and technical laboratories, as well as in teaching. New employment areas are appearing where a knowledge of biology and a second discipline are required. Examples of these are Bioengineering, Psychobiology, Environmental Science, Pharmaceutical and Biological Sales, Management in Biological Business, Oceanography, Forensic Science, and many more related to biology, such as Pharmacology and Toxicology.

Prospective biology majors or those wishing to follow a Pre-Medical, Pre-Dental, Pre-Veterinary, or Allied Health Program should consult with a member of the Biology Department before or soon after registration for their first term.

Prospective biology majors should consult with the department chairman during their first term.

BIOLOGY

Biology majors are required to take SC 251-252, CH 105-106, M 115-116 or M 117-118, SC 201, SC 301, PH 103-104, PH 105-106, SC 222, SC 308, SC 307 or SC 309, SC 361-362, SC 591-592, SC 595, and four elective courses. The language choice in order of preference is German, French, Italian, or Spanish, and Russian. One year of an elementary language is required, plus one semester at the intermediate level which should be a course in scientific literature.

CHEMISTRY

Chemistry This major is offered for those students who wish to avail themselves of the many career opportunities in the general field of chemistry and also for those who wish to go on to graduate work with a broad liberal education and a thorough grounding in a scientific discipline.

Career opportunities exist in the following areas: Management, technical purchasing or sales, research, product control, production, and product development in the chemical, pharmaceutical, or related industries; analysis and research in forensic science, medicine, oceanography, and the environmental sciences; sales and product development in the laboratory equipment field; and teaching.

In addition to the regular programs, a student may elect options in the following areas: Biology, Business, Engineering, Environmental Studies, Fire Science, Forensic Science, Pre-Dental, Pre-Medical, or Pre-Veterinary. Courses in each option are taken instead of the normal electives. For details of the options, the department chairman should be consulted.

A major in Chemistry must complete the following courses: Six to twelve semester hours of German, Russian, French, or the equivalent, PH 108, 209, 210; CH 105, 106, 211, 301, 302, 341, 401, 431, 432, 451, 452 or CH 400 elective. In addition he is required to take Mathematics through M 203.

ECONOMICS

Economics An economics major within a broad program of liberal studies provides a preparation for higher positions in business and industry today. It is also excellent preparation for graduate work in business administration or for graduate study in economics itself.

Economics majors will be required to take, in addition to EC 133-134 (Principles of Economics I and II), a total of 27 semester hours, including EC 336 (Money and Banking), EC 320 (Mathematical Methods in Economics), EC 340 (Microeconomic Analysis), EC 445 (Macroeco-

nomic Analysis), and EC 450 (Thesis). Beyond these requirements, a flexible program may be devised for each major to fit the student's needs and interests. With the approval of the chairman or some other member of the department, a student may elect suitable courses in other departments to fulfill the semester hour requirement.

Economics majors are required to take A 111 (Accounting), M 127 (Finite Mathematics), and BA 216 (Statistics).

FIRE SCIENCE ADMINSTRATION

Fire Science Administration A student earning a Bachelor's degree in Fire Science Administration is able to apply modern management techniques to the development and operation of a fire department. His programs include courses such as accounting, cost control, industrial relations, contracts and specifications, techniques of management, and collective bargaining.

Fire Science is a cross disciplinary field. It adapts courses from chemistry, mathematics, accounting, business administration, industrial engineering, civil engineering, and, in its arson investigation courses, criminal justice, as well as courses in fire prevention and suppression.

FIRE SCIENCE TECHNOLOGY

Fire Science Technology A program leading to a Bachelor's degree in Fire Science Technology is an upper-level two-year program, attracting students with degrees in fire science programs from the community colleges, continuing the educational development begun there. The stress is first of all on fire prevention. Many of the courses cover various engineering fields adapted to the problems that will confront the fire technologist. The essentials of fire chemistry, dynamics, statics, the way in which materials behave under various conditions of stress including heat, process and transportation hazards, the design of industrial structures and conveyances for the maximum protection of the worker and the public, are essential areas of study. Courses in fire suppression play a role almost equal to that of fire prevention. These include an investigation of fire suppression fluids and systems, hydraulics and thermodynamics. The student who completes this program is a planner, a designer of fire prevention systems, a judge of facilities and equipment.

Typical Fire Technology and Administration Associate Degree Program to be Completed at a Technical College Students desiring admission to the fire science administration or fire science technology programs leading to a bachelor of science degree must meet the following requirements: The student must have an associate degree in fire technology and administration as it is offered at the technical colleges or the equivalent.

Professional Courses	Sem. Hrs.
Intro. to Fire Technology	4
Municipal Fire Administration	2
Building Construction	4
Industrial Processes and Hazards	2
Hydraulic Technology	2
Water Supply and Sprinklers	2
Fire Investigation	2
Fire Fighting Strategy	2
Professional Electives	10-16
	30-36

General Courses	Sem. Hrs.
English I, II, & III	7
Mathematics	6
Science (Integrated Science or Physics and Chemistry)	6
Social or Behavioral Sciences	8
Electives	3-6
	30-33

Third and Fourth Year Programs at the University of New Haven

FIRE SCIENCE ADMINISTRATION

JUNIOR YEAR

		Cr	Cl	Lab			Cr	Cl	Lab
FS 301	Essentials of Fire Chemistry (same as CH 331)	3	2	3	FS 303	Fire Protection Fluids and Systems (same as CH332)	3	2	3
FS 401	Research Project	1	1	0	M 116	Math Analysis II or			
M 115	Math. Analysis I or				M 128	Statistics	3	3	0
M 127	Finite Math.	3	3	0	BA 125	Management & Organization	3	3	0
A 111	Introductory Accounting	3	3	0	PH 104	General Physics	3	3	2
EC 133	Principles of Economics	3	3	0	PH 106	General Physics Lab	1	0	3
	Elective	3	3	0	IE 105	Intro. to Computers or Elective	3	3	0
		16	15	3			16	14	8

SENIOR YEAR

		Cr	Cl	Lab			Cr	Cl	Lab
FS 401	Research Project	2	1	3	FS 403	Process & Transp. Hazards	3	2	3
FS 402	Arson Investigation w/Lab (same as CH411)	3	2	3	PA 408	Collective Bargaining in the Public Sector	3	3	0
BA 227	Risk and Insurance	3	3	0	CE 407	Contracts & Specifications	3	3	0
IE 223	Personnel Administration	3	3	0	BA 231	Industrial Relations	3	3	0
IE 233	Cost Control	3	3	0		Electives	6	6	0
	Elective	3	3	0			18	17	3
		17	15	6					

B.S. Degree = 129 Semester Hours

ENGLISH

English The study of English as one of the humanistic disciplines offers a solid foundation for graduate work and a liberal education, developing abilities to think critically and write effectively.

The course requirement for English majors is E 113, 206, 211-212, 213-214, and 21 additional semester hours in course work beyond the sophomore level. While no specific courses are required, students will balance their work between period courses and other offerings of the English department. Their major programs must be approved by an adviser who is a member of the English department.

Prerequisites for courses numbered 300 should include E 113, E 206 and E 211-212. Students not majoring in English who wish to take courses numbered above 300 should have permission of advisers.

English majors are responsible for meeting the foreign language requirement—the 101-102 and 201-202 courses in a language, or competence in the language equivalent to the second semester of the intermediate level.

ENVIRONMENTAL STUDIES

Environmental Studies This new Bachelor program offers the student four options in areas of concentration beyond the common group of core courses. These four specialties are: Water Quality Control, Air Quality Control, Community Health, and Community Ecology. The first three are oriented towards the biological and physical sciences, while the fourth is concentrated heavily in the behavioral and administrative sciences. Actually this latter specialty is an interdisciplinary program in the behavioral, biological, and physical sciences. There are increasing job opportunities for those trained in the general area of Environmental Studies as teachers, technicians, administrators, field workers, and as assistants to administrators in business, industry, and government.

A major in one of these areas of Environmental Studies will provide the necessary training to enable the student to continue his education and training in this area by being qualified to enter a professional school related to a specific environmental discipline, such as a school of Public Health or one of Urban Ecology.

Those students interested in one of the optional programs in Environmental Studies should consult with the chairman of the Biology Department.

HISTORY

History The study of history provides excellent preparation for those seeking professional careers in public service and general administration. This major also builds a good foundation for graduate study in various areas, such as law and teaching.

All History majors will be required to take in addition to HS 111-112 and HS 211-212 the following courses: HS 321 (History of Ancient Greece and Rome) or HS 317 (Renaissance and Reformation), and a course in Far Eastern History (HS 231 or HS 406 or HS 409). HS 416 (Senior Seminar) is required of all majors. The major program consists of 36 hours to be determined with the advisor.

The History Department also offers majors in specific area studies: in American Studies, European Studies and Economic History. A major in one of these areas should consult with the department chairman for specific requirements.

MATHEMATICS

Mathematics The program of study in mathematics can provide a student with a basis for a career in industry or teaching, as well as for further studies in graduate school. Because mathematics is fundamental to so many fields, a degree in mathematics gives one an opportunity to diversify into areas such as engineering, physics, statistics, computer science, and business administration.

A major in mathematics must complete the following courses: M 117, M 118, M 121, M 203, M 204, M 231, M 321, M 325. In addition the major must complete four 300 level or 400 level mathematics courses approved by the mathematics department and 12 semester hours of natural science or engineering selected under advisement.

WORLD MUSIC

World Music The program in World Music is unique. Music is studied as a world-wide phenomenon, not simply as defined in the Western European Art tradition. The student is encouraged to view music as a creation of all cultures and civilizations on both the folk and art levels, including our own urban and ethnic subcultures. Exposure to various musics should lead the student to specialization in a particular area as an upperclassman.

Since music is a performing art, the student is expected to reach a satisfactory level of proficiency in either a traditional western instrument or one central to the particular culture in which he chooses to specialize.

The core requirements for the major in World Music include MU 112, 198-9, 201-2, 251-2, 416 and 15 additional credits from MU 299 and above. At least three credits must be earned in MU 116.

Although the program contains no language requirement, students are urged to acquaint themselves with the language of their area of concentration.

PHILOSOPHY

Philosophy Courses in philosophy will assist the student in any major to understand himself and the world around him and to see his area of interest in broader perspective. A major in philosophy will help the student integrate a broad liberal arts education by a systematic study of the basic problems of knowledge and of the nature of reality.

A philosophy major consists of a thirty hour individually planned program in which all courses need not be those offered by the Philosophy Department. The prospective student should consult a member of the Department.

PHYSICS

Physics A major in physics will provide students with basic scientific knowledge for either a technical career or graduate school in any of the sciences and engineering.

A Physics major must complete the following courses: PH 108, 209, 210, 211, 301, 351, 373, 404, 451, one from 315, 401, 406, and 12 semester hours of Physics electives or their equivalents. In addition he must complete M 117, 118, 203, 204, 6 semester hours of Mathematics electives, CH 105 and 106.

POLITICAL SCIENCE

Political Science A Political Science major provides the student with an appropriate foundation for the study of politics or international relations at the graduate level, as well as the study of law, while at the same time it may provide the basis for a career in the electoral process, teaching, communications, the civil service, or the foreign service of the United States. All Political Science majors or potential Political Science majors should discuss job electives and goals with the department chairman at an early stage in order to select relevant courses in a total program.

A Political Science major is required to take a total of 30 semester hours in the Political Science Department, which must include PS 121, 122, 261, 461, 462, and 499 or 500. All pre-law Political Science majors should take Introductory Accounting (A111-112) as an elective and all others should take Statistics for Behavioral Science (Psychology 301) or Statistics (Business Administration 216) as an elective to complete the major.

PSYCHOLOGY

Psychology Graduate study leading to the Master's degree is minimal for professional status in Psychology. A solid foundation for such graduate work is defined by a broadly-based liberal education.

Major requirements, under advisement, include P 111, P 301, P 305, P 321, P 350 and twenty-one hours of advanced Psychology courses, SC 121, SC 123, SO 113, PHL 111 or 124 and one college-level mathematics course. Only two 200-level Psychology courses may be counted toward the major.

SOCIOLOGY

Sociology Students who wish to understand the intellectual tradition that has focused on the description and explanation of human society will be interested in a sociology major. It requires a humanistic orientation while regarding empirical research as the major means of extending knowledge about man. A sociology major may continue his work in graduate school or may find employment in such fields as government service, personnel work, advertising, and industry.

Major requirements are SO 113, 114, 250, 413, 440 or 450, P 301 or BA 216, and 15 additional semester hours in sociology at least 9 of which must be taken from the 300 level or above. No more than 3 semester hours towards a major will be accepted from social work courses.

SOCIAL WELFARE

Social Welfare Students who wish to go into Social Work and related areas may take a concentration in Social Welfare. The program trains students to work with people, both individually and in groups, perceiving problem situations and dealing with these in a professional manner. Graduates must have the knowledge, attitudes, and skills common to the profession at the baccalaureate level. They must also be aware of the overall problems confronting society today and the position social work takes in response to these problems.

There are employment opportunities in federal, state, and private organizations, or the student may wish to continue his education in a graduate school of social work.

Major requirements are: Math elective, SO 113, 114, SO 250, P 111, 301, SW 220, 350-351, 340, 415-416, 401-402, 475.

TEACHER EDUCATION

Teacher Education The University offers a Teacher Education Program to train Junior High School and Senior High School teachers in the areas of general science and mathematics. Undergraduate students who can qualify for Teacher Certification will receive the State of Connecticut Provisional Teaching Certificate. Students interested in teach-

ing should meet with the Director of the Teacher Education Program as early as possible in their college career.

A Curriculum Laboratory, open during regularly scheduled hours, loans professional materials to students, faculty members, and friends of the University to aid in their study of curriculum, teaching, and related areas.

Through the cooperation of administrators and teachers in the public school systems of Connecticut, the student preparing to teach will engage in a variety of field experiences, including observation and student teaching.

CORE BACHELOR PROGRAMS REQUIREMENTS

These course requirements and those prescribed by the students' major department must be met by all Arts and Science students. Only courses offered by Arts and Science departments can be used to satisfy the core requirements.

Bachelor of Arts

18 s.h.	**English and Humanities**
3	English Composition
3	English Composition and Literature
6	*Fine Arts
6	Literature
24 s.h.	**Social Sciences**
3	Economics
6	Western Civilization I & II
3	Philosophy
3	Psychology
3	Sociology
3	Political Science
3	A course chosen from any Social Science department
11-12 s.h.	**Science and Mathematics**
	Physics
	Chemistry
	Science
	Biology
	Mathematics
n.c.	**Physical Education—2 sem.**
Total 53-54 s.h.	

* Fine Arts includes Art, Music, and Theater.

** Students must elect at least one semester of a laboratory science.

TYPICAL FRESHMAN YEAR

Fall			Spring		
E 113	English Composition	3	E 206	English Comp. & Lit.	3
HS 111	Western Civilization I	3	HS 112	Western Civilization II	3
	Foreign Language	3		Foreign Language	3
	Mathematics or Science	3		Mathematics or Science	3
	*Elective	3		*Elective	3
PE 111	Physical Education I	0	PE 112	Physical Education II	0
		15			15

* Choices should be determined by the requirements of the student's major.

Biology SC 251-252, CH 105-106, M 115-116 or M 117-118. Omit Foreign language, Elective, and HS 111-112 in freshman year.

Economics and History PS 121, SO 113, P 111.

Chemistry M 117, 118, CH 105, 106, German or Russian.

Mathematics M 117, 118, 121.

Physics CH 105, 106, M 117, 118, PH 108, 209, German, French, or Russian. Omit HS 111-112 in freshman year.

A student will be assigned an adviser in his major area before pre-registration for the first semester of the sophomore year.

ARTS AND SCIENCES

ASSOCIATE IN SCIENCE DEGREE

The Arts & Sciences Program offers a two-year college curriculum leading to an Associate in Science degree. Although this is primarily a terminal program, most courses will transfer upon completion, should the student wish to continue for a bachelor degree.

This program offers a choice of majors to give the students a certain amount of concentration in fields in which it is felt there will be employment opportunities throughout the nation for both men and women. The majors offered are Biology, Commercial and Advertising Art, Chemistry, General Studies, and Journalism.

BIOLOGY

Biology Concentrations in Cytology, Pre-Nursing, Pre-Pharmacy, Pre-Optometry, and Environmental Science. Opportunities for a student majoring in biology are found in industrial, academic, and governmental organizations, as well as in research and medical institutions and laboratories. Examples of these would be positions as environmental health and sanitation specialists, medical technologists, medical or scientific secretaries or librarians, cytologists, nurses or nurses' aides, as well as laboratory technicians and researchers in agricultural, biological, and medical laboratories. The greatest opportunities lie in the combined fields of biology and other disciplines such as, chemistry, sociology, physics, psychology, engineering, mathematics, and business. The most popular of these is the pre-medical or pre-dental program. An A.S. in Biology will allow a student to transfer to a School of Pharmacy with two years of credit toward that degree.

CHEMISTRY

Chemistry A student majoring in chemistry will find employment opportunities in the areas of industry, government, and academic institutions. Positions are available as laboratory technicians or specialists in chemical, medical, forensic, and environmental laboratories. An A.S. in chemistry also prepares a student for medical, dental, or veterinary schools.

COMMERCIAL AND ADVERTISING ART

Commercial and Advertising Art This major is offered for both women and men who wish to obtain employment in a vast and challenging field. All graphic media, such as newspapers, magazines, brochures, company publications, and indoor and outdoor advertising displays will be covered. In addition, the courses will help develop the artistic talent of those students who are interested in art training to be used in other professions.

GENERAL STUDIES

General Studies This major is offered for those students who wish a college degree of a general nature and for those students who have not yet decided upon a field of specialization but who, in the meantime, want to start college work.

JOURNALISM

Journalism This major is offered for both women and men who wish to obtain employment in the closely related and ever expanding fields of journalism and public relations. Students taking this major will have an opportunity to work on the staff of the University's student publications.

TWO YEAR ASSOCIATE IN SCIENCE PROGRAM

BIOLOGY

Biology Major

FIRST YEAR

	Fall	Sem. Hrs.	Lab. Hrs.	Class Hrs.		Spring	Sem. Hrs.	Lab. Hrs.	Class Hrs.
E 113	Eng. Comp.	3	0	3	E 206	Eng. Comp. & Lit.	3	0	3
SC 121	Biology I	3	0	3	SC 122	Biology II	3	0	3
SC 131	Biology Lab. I	1	3	0	SC 132	Biol. Lab. II	1	3	0
CH 105	Gen. Chem. I w/Lab.	4	3	3	CH 106	Gen. Chem. II w/Lab.	4	3	3
M 115	Math. Analysis I or				M 116	Math. Analysis II or			
M 117	Calculus I	3	0	3	M 118	Calculus II	3	0	3
PE 111	Physical Ed. I	0	0	2	P 112	Physical Ed. II	0	0	2
	Total	14	6	14		Total	14	6	14

SECOND YEAR

SO 113	Sociology	3	0	3		English elective	3	0	3
SC 251	Zoology w/Lab.	4	3	3	SC 252	Botany w/Lab.	4	3	3
	Biology elective	4	3	3	SC 301	Microbiology with/Lab.	4	3	3
SC 201	Genetics	3	0	3					
ART 201	Drawing & Painting	3	0	3	P 111	Psychology	3	0	3
						Biology elective	4	3	3
	Total	17	6	15		Total	18	9	15

CHEMISTRY

Chemistry Major

FIRST YEAR

	Fall	Sem. Hrs.	Lab Hrs.	Class Hrs.		Spring	Sem. Hrs.	Lab Hrs.	Class Hrs.
CH105	General Chem I w/Lab.	4	3	3	CH 106	General Chem II w/Lab.	4	3	3
E 113	English Comp.	3	0	3	E 206	Eng. Comp. & Literature	3	0	3
GR 101	Elem. German I or Elective	3	0	3	GR 102	Elem. German II or Elective	3	0	3
M 117	Calculus I	3	0	3	M 118	Calculus II	4	0	4
PHL111	Philosophy	3	0	3	PH 108	Physics I w/lab.	3	3	2
PE 111	Phys. Ed. I	0	0	2	PE 112	Phys. Ed. II	0	0	2
	Total	16	3	17		Total	17	6	17

SECOND YEAR

CH 301	Organic Chem. I w/lab.	4	4	3	CH 302	Organic Chem. II w/lab.	4	4	3
CH 211	Quant. Anal w/lab.	4	4	3	CH 341	Instru. Methods of Anal w/lab.	4	3	3
	English Lit-Elec.	3	0	3		English Lit-Elec.	3	0	3
M 203	Calculus III	4	0	4	HS 111	Western Civil. I	3	0	3
PH 209	Physics II w/lab.	3	3	2	PH 210	Physics III w/lab.	3	3	2
	Total	18	11	15		Total	17	10	14

COMMERCIAL AND ADVERTISING ART

Commercial and Advertising Art Major

FIRST YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
ART 101	Introduction to Studio Art I	3	ART 102	Introduction to Studio Art II	3
ART 211	Design I	3	ART 212	Design II	3
E 113	English Composition	3	E 206	Eng. Comp. & Literature	3
PE 111	Physical Education I	0	P 111	Psychology	3
PS 121	American Government	3	PE 112	Physical Education II	0
	Elective	3		Elective	3
	Total	15		Total	15

SECOND YEAR

ART 312	Lettering	3	ART 122	Layout & Print. Tech.	3
BA 107	Advertising & Promotion	3	ART 131	History of Art Elective	3
EC 133	Prin. of Economics I	3		Elective	3
	Literature Elective	3		Literature Elective	3
	Science of Math.	3		Science or Math.	3
	Total	15		Total	15

The student is expected to carry 15 credit hours per semester. A total of 60 semester hours is required for the degree.

GENERAL STUDIES

General Studies Major

FIRST YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
E 113	English Composition	3	E 206	Eng. Comp. & Lit.	3
P 111	Psychology	3	HS 111	Western Civ. I	3
PE 111	Physical Education I	0	SO 113	Sociology	3
PS 121	American Government	3		Foreign Language or Elective	3
	Foreign Language or Elective	3	PE 112	Physical Education II	0
	*Elective	3		*Elective	3
	Total	15		Total	15

SECOND YEAR

	Foreign Language or Elective	3	HS 112	Western Civ. II	3
EC 133	Prin. of Economics I	3		Foreign Language or Elective	3
	Literature Elective	3		Science, or Math.	3
	Science, or Math.	3		*Electives	6
	*Elective	3		Total	15
	Total	15			

* Students who expect to transfer to a four-year program leading to a Bachelor degree should complete 12 hours of science or mathematics.

The student is expected to carry 15 credit hours per semester. A total of 60 semester hours is required for the degree.

Journalism Major

FIRST YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
E 113	English Composition	3	ART 122	Layout & Print. Tech.	3
J 101	Journalism I	3	E 206	Eng. Comp. & Lit.	3
PE 111	Physical Education I	0	J 102	Journalism II	3
PS 121	American Government	3	P 111	Psychology	3
HS 111	Western Civ. I	3	PE 112	Physical Education II	0
	Elective	3	HS 112	Western Civ. II	3
	Total	15		Total	15

SECOND YEAR

EC 133	Prin. of Economics I	3	EC 134	Prin. of Economics II	3
J 201	News Writing & Reporting	3	J 301	Advanced Journalism & Feature Writing	3
SO 113	Sociology	3		Literature Elective	3
	Literature Elective	3		Science or Math.	3
	Science or Math.	3		Elective	3
	Total	15		Total	15

The student is expected to carry 15 credit hours per semester. A total of 60 semester hours is required for the degree. The student majoring in Journalism should be able to type.

SCHOOL OF BUSINESS ADMINISTRATION

WARREN J. SMITH, DEAN

Bachelor of Science Degree

MAJORS IN:

- ACCOUNTING
- COMMUNICATIONS
- ECONOMICS
- FINANCE
- GENERAL MANAGEMENT
- HOTEL ADMINISTRATION
- INTERNATIONAL BUSINESS
- OPERATIONS MANAGEMENT
  INCLUDING COMPUTER SCIENCE
- MANAGEMENT
- MARKETING
- PUBLIC ADMINISTRATION
- RETAILING
- CRIMINAL JUSTICE WITH PROGRAMS IN
  LAW ENFORCEMENT ADMINISTRATION
  FORENSIC SCIENCE
  CORRECTIONAL ADMINISTRATION

Associate in Science Degree

MAJORS IN:

- BUSINESS ADMINISTRATION
- CORRECTIONAL ADMINISTRATION
- HOTEL ADMINISTRATION
- LAW ENFORCEMENT
- RETAILING

BUSINESS ADMINISTRATION

The School of Business Administration provides programs to prepare students for (1) several areas of business and economics, (2) the broad field of criminal justice, and (3) public administration. The courses of study combine strong professional programs with comprehensive background in the liberal arts.

BUSINESS AND ECONOMICS

The School of Business Administration considers it axiomatic that, over the long run, a graduate is better prepared for the business world when his collegiate business background has been comprehensive rather than highly specialized. Consequently, only a limited amount of specialization is intended in the various departmental majors.

GENERAL MANAGEMENT

General Management—is the field generally chosen by those students who do not have a particularized objective.

ACCOUNTING

Accounting—is selected by those who wish to make this their career, including possibly ultimate attainment of the Certified Public Accountant license. Accounting has long been recognized as a preferred route to management responsibilities in many fields of business.

The student has the option of selecting the Financial Accounting Concentration or the Managerial Accounting Concentration.

COMMUNICATIONS

Communications The opportunities to the graduate are unlimited. A career field may be chosen in any one of several media.

ECONOMICS

Economics—is a broad field in which specialists are called for by industry and government particularly to staff various types of research activities. This major is also one that would be considered by the student contemplating future graduate work or attendance at law school.

FINANCE

Finance—is one of the business disciplines that has extensive application to businesses generally.

HOTEL ADMINISTRATION

Hotel Administration—is selected by those who wish to make this their career. There are numerous opportunities available to the graduate in the institutional field, restaurant management, hotel administration, and tourism.

INTERNATIONAL BUSINESS

International Business A comparatively new field of study dealing with the problems of developing and adopting business practices for the purpose of operating within different economies, different political systems and different cultures. Selected by students who wish to make this their career.

Management—this provides the student with an understanding of the business organization and the concepts underlying the managerial processes. The graduate has numerous opportunities available to him in many fields of business.

MANAGEMENT

Marketing—is a widely recognized phase of business that presents unmatched opportunities to the qualified graduate, depending on whether his interests are in the selling, managing, or analytical phases.

MARKETING

Operations Management—is a growing profession. Its practices make increased use of quantitative analysis in the scientific management of business. Students with specific interest in data processing usually select this field.

OPERATIONS MANAGEMENT

Public Administration The Public Administration program is designed to prepare students for careers in public affairs (government service, politics), governmental research, graduate school, or to give the student an insight, generally, into the various governmental organizations, functions, and methodology which are used to both determine and provide the services to the people.

PUBLIC ADMINISTRATION

On the premise that the basic skills required in managerial positions in public service have much in common with those of the manager in private industry, the student follows much the same program as other business students during the first two years.

For his junior and senior years, the student majoring in Public Administration will arrange his program under the guidance of his Departmental Chairman, so as to meet his defined objectives. A wide selection of courses is available in the School of Business Administration and the School of Engineering.

Retailing—is selected by those who wish to make this field of business their career. The opportunities available to the graduate are varied offering opportunities in selling, merchandising and advertising.

RETAILING

Criminal Justice Four-year bachelor degree programs in criminal justice are offered. They are planned for high school graduates interested in any of the many careers in the administration and operation of criminal justice agencies on the federal, state, and local levels of government. Three programs are offered: Law Enforcement Administration, Forensic Science, and Correctional Administration.

CRIMINAL JUSTICE

LAW ENFORCEMENT ADMINISTRATION

Law Enforcement Administration This program prepares students for administrative careers with federal, state, and local law enforcement agencies or public and private security forces. Law enforcement administration is concerned with the activities and behavior of people in terms of maintaining law and order, providing needed services, and protecting life and property. The program provides basic studies in the liberal arts and public administration as well as courses pertaining to law enforcement administration and criminal justice.

FORENSIC SCIENCE

Forensic Science This program prepares students for careers as forensic scientists, criminologists, or evidence technicians in the field of criminal investigation and identification. The program includes basic studies in the natural sciences, liberal arts, and public administration as well as courses in forensic science and criminal justice.

CORRECTIONAL ADMINISTRATION

Correctional Administration This program prepares students for administrative careers with federal, state, local, and private correctional agencies. Correctional administration is concerned with the institutional and noninstitutional treatment of offenders. The program provides basic studies in the liberal arts and public administration as well as courses pertaining to correctional administration and criminal justice.

BUSINESS ADMINISTRATION

A student with a two-year degree and at least a 2.0 QPR will receive transfer credit for as many hours as the degree requires. No more than 60 semester hours from a two-year college will be accepted, except by authorization of the dean of the school in which the student is enrolled. The maximum number of semester hours of transfer credit from any source is 90 semester hours. It is not necessary that a transferred course correspond to one in the university catalog.

ADMISSION

College transfer applicants will have their official academic transcripts and records evaluated on the general basis that work at an accredited two or four year college of a "C" or better quality will be accepted when a comparable course is offered at this university. Transfer credit is not confirmed until the student has completed successfully one semester at this university. Transfer credit from a two year institution will not be allowed in excess of one half of the semester hours required for graduation here.

Applicants from the Armed Services and other mature individuals are invited to inquire about the possibility of crediting examinations in lieu of certain course work.

BUSINESS ADMINISTRATION

CORE COURSES

FIRST YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
E 113	English Composition	3	E 206	Composition & Literature	3
HS 112	Western Civilization II	3 (a)	HS 114	Economic History of the Western World	3
BA 101	Business Law	3			
BA 118	Business Mathematics I	3 (b)(c)	BA 128	Quantitative Techniques	3
	Sociology or Psychology or Political Science	3	BA 105	Marketing	3
			IE 105	Technical Data Processing	3
PE 111	Physical Education	0	PE 112	Physical Education	0
	Total	15		Total	15

SECOND YEAR

A 111	Introductory Accounting	3	A 112	Introductory Accounting	3
EC 133	Principles of Economics	3	EC 134	Principles of Economics	3
	Literature or Philosophy or Fine Arts	3 (a)(d)		Literature or Philosophy or Fine Arts	3
BA 216	Statistics	3 (e)	BA 125	Management & Organizations	3
	Science	3		Science	3
	Total	15		Total	15

Notes: (a) Accounting majors will defer these subjects and take instead A 111 - A 112 Introductory Accounting in their freshman year and A 221-A 222 Intermediate Accounting in their Sophomore year.

(b) Subject to placement examination by the School of Business.

(c) M 115 Mathematical Analysis I and M 116 Mathematical Analysis II may be substituted for the BA 118 and BA 128 sequence. Operations Management, Economics, and Finance majors are advised to take the M 115, M 116 sequence.

(d) Operations Management majors who do not take the M 115 - M 116 sequence should defer Literature, Philosophy, or Fine Arts elective until the first semester of the junior year, and take instead BA 250 Quantitative Analysis.

(e) Retailing and Communication majors will take BA 314 Attitude Research Methods.

Before the end of his sophomore year a student will select a business major and a minor in consultation with the appropriate chairman or other designated advisor. His degree program for his third and fourth years will be prepared in consultation with his advisor. This will involve the selection of electives in addition to the required courses. Elective means all courses offered by the University.

Courses offered outside of the School of Business Administration or the Industrial Engineering Department of the School of Engineering shall comprise not less than 50 semester hours of all work taken toward graduation. Representative programs follow. A minimum of 120 semester hours is required for graduation.

BUSINESS ADMINISTRATION

GENERAL MANAGEMENT

General Management

THIRD YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
BA 312	International Business	3	BA 227	Risk and Insurance	3
BA 113	Finance	3	EC 340	Microeconomic Analysis	3
	Sociology or Psychology or Political Science	3	EC 336	Money and Banking	3
	Electives	6		Electives	6
	Total	15		Total	15

FOURTH YEAR

BA 231	Industrial Relations	3	EC 311	Govt. Regulation of Business	3
BA 510	Managerial Economics	3		Business Seminar	3
	Electives	9	BA 512	Business Elective	3
	Total	15		Electives	6
				Total	15

ACCOUNTING

Financial Accounting Concentration

THIRD YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
A 223	Cost Accounting I	3	A 224	Cost Accounting II	3
A 331	Advanced Accounting I	3	A 332	Advanced Accounting II	3
HS 112	Western Civ. II	3	HS 114	Economic History of Western World	3
BA 113	Business Finance	3		Psychology, Sociology or Political Science	3
	Elective	3		Elective	3
	Total	15		Total	15

FOURTH YEAR

A 335	Income Tax Procedure I	3	A 336	Income Tax Procedure II	3
A 333	Auditing I	3	A 334	Auditing II	3
BA 510	Managerial Economics	3	BA 512	Business Seminar	3
	Electives	6		Electives	6
	Total	15		Total	15

Managerial Accounting Concentration

THIRD YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
A 223	Cost Accounting I	3	A 224	Cost Accounting II	3
A 331	Advanced Accounting	3	BA 113	Business Finance	3
HS 112	Western Civ. II	3	HS 114	Economic History of Western World	3
EC 340	Microeconomic Anal.	3		Quantitative Analysis	3
	Elective	3	BA 250	Psychology, Sociology or Political Science	3
	Total	15		Total	15

BUSINESS ADMINISTRATION

ECONOMICS

FOURTH YEAR

A 335	Income Tax Procedure I	3	A 336	Income Tax Procedure II	3
A 333	Auditing I	3	A 341	Financial Decision Making	3
BA 510	Managerial Econ.	3	BA 512	Business Seminar	3
A 339	Managerial Acctg.	3		Advanced Management Theory	3
	Elective	3		Elective	3
	Total	15		Total	15

Economics

THIRD YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
EC 336	Money and Banking	3	EC 340	Microeconomic Analysis	3
	Economics Electives	6		Economics Elective	3
	Electives	6		Sociology or Psychology or Political Science	3
	Total	15		Electives	6
				Total	15

FOURTH YEAR

EC 445	Macroeconomic Analysis	3	BA 512	Business Seminar	3
EC 320	Mathematical Methods in Economics	3		Economics Electives	6
	Electives	9		Electives	6
	Total	15		Total	15

Marketing

THIRD YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
BA 301	Retailing	3	BA 316	Sales Management	3
BA 231	Industrial Relations	3	BA 302	Industrial Marketing	3
BA 315	Marketing Management	3		Sociology or Psychology or Political Science	3
	Electives	6		Electives	6
	Total	15		Total	15

FOURTH YEAR

BA 342	Marketing Research	3	BA 107	Advertising & Promotion	3
BA 510	Managerial Economics	3	BA 512	Business Seminar	3
BA 312	International Business	3		Electives	9
	Electives	6		Total	15
	Total	15			

MARKETING

BUSINESS ADMINISTRATION

OPERATIONS MANAGEMENT

Operations Management

THIRD YEAR

Fall		Sem. Hrs.	Spring		Sem. Hrs.
IE 233	Cost Control	3	IE 503	Operations Research	3
BA 231	Industrial Relations	3		Business Elective	3
	Business Elective	3		Sociology or Psychology or Political Science	3
	Electives	6		Electives	6
	Total	15		Total	15

FOURTH YEAR

IE 508	Systems Analysis	3	IE 234	Production Control	3
BA 510	Managerial Economics	3	BA 512	Seminar	3
	Business Elective	3		Electives	9
	Electives	6		Total	15
	Total	15			

FINANCE

Finance

THIRD YEAR

Fall		Sem. Hrs.	Spring		Sem. Hrs.
EC 336	Money and Banking	3	BA 230	Investments	3
EC 445	Macroeconomic Analysis	3		Sociology or Psychology or Political Science	3
BA 113	Finance	3		Business Elective	3
	Electives	6		Electives	6
	Total	15		Total	15

FOURTH YEAR

EC 314	Public Finance	3	BA 229	Financial Management	3
BA 510	Managerial Economics	3	BA 512	Business Seminar	3
BA 333	Advanced Statistics	3	BA 227	Risk and Insurance	3
	Electives	6		Electives	6
	Total	15		Total	15

BUSINESS ADMINISTRATION

COMMUNICATIONS MAJOR

FIRST YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
E 113	English Composition	3	E 206	Comp. and Lit.	3
PS 121	American Government	3		Psychology or Sociology	3
	Psychology or Sociology	3	HS 114	Economic History of the Western World	3
HS 112	Western Civ. II	3		Science/Math	3
	Science/Math	3		Elective	3
	Physical Education	0		Physical Education	0
	Total	15		Total	15

SECOND YEAR

BA 125	Management & Organization	3	PA 301	Principles of Public Administration	3
EC 133	Prin. of Economics	3			
PA 101	Fundamentals of Communications	3	PA 208	Sound Studio	3
	Literature or Fine Arts	3	PA 102	Problems of Communications	3
	Elective	3		Literature or Fine Arts	3
			ART 221	Design	3
	Total	15		Total	15

THIRD YEAR

PA 210	Film Making Theory and Practice	3	PA 220	Film Production	3
			PL 111	Philosophy	3
PA 206	Radio Broadcasting	3	PS 369	Public Opinion and Social Pressures	3
PS 368	Political Sociology	3		Restrictive Elective	3
	Restrictive Elective	3		Elective	3
	Elective	3			
	Total	15		Total	15

FOURTH YEAR

P 320	Social Psychology	3		Restrictive Electives	6
BA 314	Attitude Research Methods	3		Electives	9
	Restrictive Electives	6			
	Elective	3		Total	15
	Total	15			

The student will take 5 courses as follows: PA 101, PA 102, PA 208, PA 210 and PA 220. In addition he would take 6 restricted electives determined by his advisor. The courses might be T. V. Production 1 and 2, Dramatic Writing, Laws of Communication, Government Regulations of Media, Comparative Broadcast Systems. These courses emphasize field work. The program allows room for a minimum of 6 elective courses. These courses could be taken from any division under the guidance of his advisor. They would be courses related to his major. Thus a student would have 33 hours in his major and a minimum of 18 hours of free electives.

BUSINESS ADMINISTRATION

HOTEL AND RESTAURANT ADMINISTRATION MAJOR

Hotel and Restaurant Administration

FIRST YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
E 113	English Composition	3	E 220	Report Writing	3
BA 101	Legal Concepts	3	BA 105	Marketing	3
HM 103	Principles of Hotel Management	3	HM 104	Procedures & Techniques in Hotel Management	3
	Math	3		Math	3
	Sociology or Psychology or Political Science	3	IE 105	*Technical Data Processing	3
PE 111	Physical Education	0	PE 112	Physical Education	0
	Total	15		Total	15

SECOND YEAR

HM 111	Introductory Accounting	3	HM 112	Introductory Accounting	3
EC 133	Principles of Economics	3	BA 107	Advertising & Promotion	3
	Science**	3		Science**	3
BA 113	Business Finance	3	HM 150	Management Decision Making	3
HM 165	Tourism	3	BA 125	Management & Organization	3
	Total	15		Total	15

THIRD YEAR

HM 302	Purchasing	3	HM 342	Management Accounting	3
BA 227	Risk & Insurance	3	BA 230	Investments	3
	Literature or Philosophy or Fine Arts	3		Sociology or Psychology or History	3
	Hotel Management Elective	3		Hotel Management Elective	3
	Elective	3		Elective or Foreign Language	3
	Total	15		Total	15

FOURTH YEAR

EC 350	Economics of Labor Relations	3	HM 512	Seminar in Hotel Management	3
BA 316	Sales Management	3	HM 411	Analysis of Design Systems	3
	Hotel Management Elective	3		Hotel Management Elective	3
	Electives	6		Electives	6
	Total	15		Total	15

* Students may Substitute HM 410.

** SC 115-116 Biology is recommended.

Hotel Management Elective, from area of Hotel Administration, Restaurant Management, Institutional Management, Tourism and Travel.

Criminal Justice — Law Enforcement Administration Major

FIRST YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
CJ 101	Intro. to Criminal Justice	3	CJ 104	Police Org. & Admin.	3
E 113	English Composition	3	E 206	English Comp. and Lit.	3
SO 113	Sociology	3		Math	3
P 111	Psychology	3	PS 122	State & Local Govt. & Politics	3
PS 121	American Government	3	EC 133	Economics I	3
PE 111	Physical Education I	0	PE 112	Physical Education II	0
	Total	15		Total	15

SECOND YEAR

PA 301	Principles of Public Admin.	3	CJ 215	Introd. to Forensic Science	3
CJ 105	Interpersonal Relations	3	CJ 218	American Legal System II	3
CJ 201	Principles of Criminal Invest.	3	CJ 221	Juvenile Delinquency	3
CJ 217	American Legal System I	3	SC 123	Human Biology	3
SC 121	Biology I	3	SC 132	Biology Lab. II	1
SC 131	Biology Lab. I	1		Elective	3
	Total	16		Total	16

THIRD YEAR

CJ 301	Group Dynamics in Criminal Justice	3	CJ 311	Criminology	3
CJ 400	Criminal Justice Problems Sem.	3	PS 302	Constitutional Law	3
CJ 404	Criminal Law	3	P 336	Abnormal Psychology	3
SO 450	Research Seminar	3	IE 346	Statistical Analysis	3
	Elective	3		Elective	3
	Total	15		Total	15

FOURTH YEAR

CJ 107	Correctional Org. & Admin.	3	IE 507	Systems Analysis	3
CJ 402	Police-Community Relations	3	CJ 405	Seminar in Criminal Justice: Violence (1973-74)	3
CJ 498	Research Project or Elective	3		Internship or Elective	3
IE 105	Intro. to Computer/Bus.	3	CJ 501	Elective	3
	Elective	3		Elective	3
	Total	15		Total	15

TOTAL: 122 Semester Hours

BUSINESS ADMINISTRATION

CRIMINAL JUSTICE
LAW ENFORCEMENT ADMINISTRATION MAJOR

Criminal Justice — Correctional Administration Major

FIRST YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
CJ 101	Intro. to Criminal Justice	3	CJ 107	Correct. Org. & Admin.	3
E 113	English Composition	3	E 206	English Composition & Lit.	3
SO 113	Sociology	3	PS 122	State & Local Govt. & Politics	3
P 111	Psychology	3	CJ 311	Criminology	3
PS 121	American Govt. & Politics	3		Elective	3
PE 111	Physical Education I	0	PE 112	Physical Education II	0
	Total	15		Total	15

SECOND YEAR

CJ 109	Correctional Treatment Programs	3	CJ 221	Juvenile Delinquency	3
CJ 217	American Legal Sys. I	3	CJ 218	American Legal System II	3
EC 133	Economics I	3	CJ 301	Group Dynamics in Criminal Justice	3
SC 121	Biology I	3	SC 123	Human Biology	3
SC 131	Biology Lab. I	1	SC 132	Biology Lab. II	1
P 315	Psychology of Learning	3	CJ 302	Behaviorism: Applications in Criminal Justice	3
	Total	16		Total	16

THIRD YEAR

CJ 105	Interpersonal Relations	3	IE 346	Statistical Analysis	3
SO 450	Research Seminar	3	P 336	Abnormal Psychology	3
PS 302	Constitutional Law	3	CJ 309	Probation and Parole	3
P 216	Developmental Psychology	3	CJ 308	Correctional Counseling	3
	Math	3	CJ 404	Criminal Law	3
	Total	15		Total	15

FOURTH YEAR

P 370	Psychology of Personality	3	SC 361	Physiological Psychology	3
CJ 400	Criminal Justice Prob. Seminar	3	IE 507	Systems Analysis	3
CJ 501	Internship or Elective	3	CJ 405	Seminar in Criminal Justice: Violence (1973-74)	3
PA 301	Prin. of Public Admin.	3	CJ 501	Internship or Elective	3
	Elective	3		Elective	3
	Total	15		Total	15

TOTAL: 122 Semester Hours

Day courses offered by the Department of Criminal Justice on the main campus in West Haven meet either on Tuesday and Thursday or Monday, Wednesday, and Friday. Evening courses offered on the main campus meet one evening each week from 7:00 to 9:45 p.m. Extension courses conducted in New Britain, Waterbury, and New London generally meet one evening each week from 7:00 to 9:45 p.m.

However, a number of courses conducted on the main campus and extension courses in New Britain, Waterbury, and New London are offered on a special basis one day each week. Under this arrangement, the course meets one morning each week from 9:00 to 11:45 a.m. and again the same evening from 7:00 to 9:45 p.m. Students may attend either lecture that week depending upon their work schedule.

Criminal Justice — Forensic Science Major

FIRST YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
E 113	English Composition	3	E 206	English Comp. & Lit.	3
CJ 101	Intro. to Criminal Justice	3	CJ 104	Police Org. & Admin. II	3
SC 121	Biology I	3	SC 122	Biology II	3
SC 131	Biology Lab. I	1	SC 132	Biology Lab. II	1
CH 105	General Chemistry I w/Lab.	4	CH 106	General Chemistry II w/Lab.	4
	Elective	3		Elective	3
PE 111	Physical Education I	0	PE 112	Physical Education II	0
	Total	17		Total	17

SECOND YEAR

PH 103	General Physics I	3	PH 104	General Physics II	3
PH 105	General Physics Lab. I	1	PH 106	General Physics Lab. II	1
M 115	Math. Analysis I	3	M 116	Math. Analysis II	3
P 111	Psychology	3	SO 113	Sociology	3
CJ 217	Amer. Legal Sys. I	3	CJ 218	Ameri. Legal Sys. II	3
CJ 201	Princ. of Criminal Invest.	3	CJ 215	Intro. Forensic Science	3
	Total	16		Total	16

THIRD YEAR

CJ 303	Forensic Sci. Lab. I	3	CJ 304	Forensic Sci. Lab. II	3
CH 104	Elem. Org. Chemistry	3	CJ 311	Criminology	3
CH 108	Elem. Org. Chemistry Lab.	1	CH 341	Instrumental Methods Analysis w/lab.	4
CH 211	Quant. Analysis w/lab.	4			
SC 361	Biochemistry I w/Lab.	4	SC 362	Biochemistry II w/Lab.	4
			CJ 501	Internship or Elective	3
	Total	15		Total	17

FOURTH YEAR

CH 301	Organic Chem. w/Lab	4	CH 302	Organic Chem. w/ Lab.	4
SC 419	Pharmacology w/Lab.	4	CH 351	Qual. Org. Chem. w/Lab.	4
SC 421	Toxicology w/Lab.	4	CH 432	Physical Chemistry w/Lab.	4
CH 431	Physical Chemistry w/Lab.	4	SC 313	Scientific Photographic Documentation	4
	Total	16		Total	16

TOTAL: 130 Semester Hours

Associate Degree Programs Successful completion of the first two years of one of the programs offered by the Department of Criminal Justice with a minimum quality point average of 2.0 qualifies the student for the Associate in Science in either Law Enforcement Administration, Forensic Science, or Correctional Administration.

BUSINESS ADMINISTRATION

PUBLIC ADMINISTRATION

BACHELOR DEGREE PROGRAM

70

Public Administration

FIRST YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
E 113	English Composition	3	E 206	Composition & Literature	3
HS 112	Western Civilization II	3	HS 114	Economic History of the Western World	3
	*Science	3		*Science	3
	Math.	3		Math.	3
	Sociology or Psychology	3	IE 105	Technical Data Processing	3
PE 111	Physical Education	0	PE 112	Physical Education	0
	Total	15		Total	15

SECOND YEAR

A 111	Introductory Accounting	3	A 114	Municipal Accounting	3
EC 133	Principles of Economics	3	EC 134	Principles of Economics	3
PS 121	American Government	3		Literature or Philosophy or Fine Arts	3
BA 216	Statistics	3	PS 216	Urban Government	3
BA 101	Business Law	3	BA 125	Management & Organization	3
	Total	15		Total	15

THIRD YEAR

PA 301	Public Administration	3	PA 302	Procedures in Public Admin.	3
EC 314	Public Finance	3	PA 390	Administrative Law	3
	Electives	9	PA 307	Urban & Regional Problems	3
				Electives	6
	Total	15		Total	15

FOURTH YEAR

PA 408	Collective Bargaining in the Public Sector	3	PA 490	Prin. & Practices of Public Health Administration	3
PA 320	Municipal Finance and Budgeting	3	PA 512	Seminar in Public Admin.	3
	Electives	9		Electives	9
	Total	15		Total	15

* SC 121-122 Biology with lab. is recommended.

TOTAL: 120 Semester Hours

BUSINESS ADMINISTRATION

RETAILING BACHELOR DEGREE PROGRAM

FIRST YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
E 113	English Composition	3	E 206	Composition & Literature	3
HS 112	Western Civilization II	3	HS 114	Economic History of the Western World	3
BA 101	Business Law I	3			
	Math	3	BA 105	Principles of Marketing	3
	Sociology, Psychology or Political Science	3		Math	3
			IE 105	Tech. Data Processing	3
PE 111	Physical Education	0	PE 112	Physical Education	0
	Total	15		Total	15

SECOND YEAR

A 111	Introductory Accounting I	3	A 112	Introductory Accounting II	3
EC 133	Principles of Economics I	3	EC 134	Principles of Economics II	3
BA 107	Advertising & Promotion	3	BA 301	Retailing	3
BA 314	Attitude Research	3	BA 125	Management & Organization	3
	Science	3		Science	3
	Total	15		Total	15

THIRD YEAR

RET 209	Retail Advertising & Sales Promotion	3	RET 215	Retail Credit Management	3
			RET 213	Furniture & Apparel Accessories	3
RET 212	Textiles	3			
BA 231	Industrial Relations	3		Sociology, Psychology, or Political Science	3
	Electives	6		Electives	6
	Total	15		Total	15

FOURTH YEAR

RET 303	Fashions in Retailing	3	RET 310	Retail Merchandise Mgmt.	3
	Literature, Philosophy or Fine Arts	3	BA 512	Seminar	3
				Internship	3
BA 510	Managerial Economics	3		Electives	6
	Electives	6			
	Total	15		Total	15

SCHOOL OF ENGINEERING

THOMAS C. WARNER, JR., DEAN

Bachelor of Science Degree

MAJORS IN:

- CIVIL ENGINEERING
- ELECTRICAL ENGINEERING
- INDUSTRIAL ENGINEERING
- MATERIALS ENGINEERING
- MECHANICAL ENGINEERING
- INDUSTRIAL TECHNOLOGY
  - COMPUTER OPTION
  - MANAGEMENT OPTION

Associate in Science Degree

MAJORS IN:

- ENGINEERING SCIENCE
- ENGINEERING
- OCCUPATIONAL SAFETY AND HYGIENE

ENGINEERING

ADMISSION REQUIREMENTS

An applicant for admission to the Engineering Programs should be a graduate of a secondary school of approved standing and should present 15 acceptable units of secondary school work. These should include 4 units of English, 2 units of algebra, 1 of plane geometry, ½ of trigonometry, and 1 unit each of physics and a second science. Deficiencies in English, mathematics, and/or science may be satisfied by summer school attendance, or by an extension of the stated curriculum for one or two semesters chosen to fit the student's need.

Satisfactory placement in tests covering scholastic aptitude, mathematics, and English, as given by the College Entrance Examination Board (S.A.T.) or American College Testing Program (A.C.T.), is required.

MATRICULATION

Matriculation for Bachelor's Degree Students who have completed at least two semesters or equivalent (30 academic credit hours) with a minimum quality point ratio of 2.00 may apply for matriculation for the Bachelor's degree.

Admission will be limited to applicants who have given evidence of capacity and motivation adequate for upper division work as determined by the chairman of the department.

A cumulative quality point ratio of at least 2.00 is required in a Bachelor of Science student's major field.

PROFESSIONAL ACCREDITATION

Professional Accreditation The School of Engineering's Mechanical Engineering curriculum has been accredited by the Engineers' Council for Professional Development (ECPD).

CIVIL ENGINEERING

Civil Engineering Bachelor of Science Program: The oldest of all branches of engineering, Civil Engineering is one of the newer Bachelor of Science programs at the University of New Haven. The continued rapid growth of the nation's and the world's economies requires the expenditure of billions of dollars annually for the design and construction of new facilities for commercial, industrial, institutional, and residential buildings, transportation systems of all types, water supply, and sanitary engineering projects. A major area for future development is pollution control of all types; Civil Engineers will play an important role in this field. The student is exposed to these and other areas and, upon the completion of the prescribed four-year curriculum, receives the Bachelor of Science degree in Civil Engineering.

ELECTRICAL ENGINEERING

Electrical Engineering Bachelor of Science Program: This program is planned to give students a sound foundation for a professional career in the utilization of electricity in the modern industrial world and in the fields of experimental science and technology. The training includes not only mathematics, mechanics, physics, and chemistry, but also economics and other liberal arts subjects. The student becomes familiar with the calculation of circuits of electric, magnetic, and dielectric types, theory of generators, motors, magnets, and other apparatus, electrical transmission of energy, automation, semiconductors, electronic computers, information theory, microwaves, and related subjects. A great future is open in research in varied areas including the concentrated application of engineering principles to improved productivity and reduction in human drudgery. Upon satisfactory completion of the prescribed four-year curriculum, graduating students receive the Bachelor of Science degree in Electrical Engineering.

INDUSTRIAL ENGINEERING

Industrial Engineering Bachelor of Science Program: The study of Industrial Engineering prepares a student for a successful career in the manufacturing, research, and service industries. Based as it is on a broad engineering background, the professional program taken in the last two years offers a perspective which enables the graduate to cope with complex problem situations encountered in modern industry. Special attention is given to preparing the student for the intelligent use of computers in modern industrial practice. Upon satisfactory completion of the prescribed four-year curriculum, graduates will receive the Bachelor of Science degree in Industrial Engineering.

MATERIALS ENGINEERING

Materials Engineering Bachelor of Science Program: Materials Engineering is the systematic control of material properties such as strength, electrical conductivity, and corrosion resistance, through the understanding of the internal microscopic structure of materials. Practically every product, tool, machine, or building is constructed with careful attention paid to the materials from which it is made. Concrete must withstand years of heat and extreme cold. Plastics change dramatically with temperature. Rubber compounds support every automobile occupant. Metal parts must withstand heat, tension, compression, and fatigue. Each design and fabrication is a critical process. Materials Engineers are therefore respected experts whose decisions on quality, safety, and materials selection are of vital concern to airlines, government laboratories, steel mills, tire manufacturers, and atomic energy installations.

MECHANICAL ENGINEERING

Mechanical Engineering. Bachelor of Science Program: The tremendously broad field of Mechanical Engineering requires a common core of fundamental knowledge which is obtained in the required courses in this major. Upon the completion of these required courses, the student, in consultation with his faculty advisor, selects restricted electives which will give him advanced courses in his area of greatest interest. Some of these areas are shown following the B.S.M.E. program description. Upon satisfactory completion of the prescribed four-year curriculum, graduates will receive the Bachelor of Science degree in Mechanical Engineering.

INDUSTRIAL TECHNOLOGY

Industrial Technology The curriculum leading to the degree of Bachelor of Industrial Technology is designed to produce a practitioner who is highly prepared to apply established scientific and engineering knowledge and methods in the support of industrial engineering activities. Moreover, the industrial technology program will produce a professional who will be expected to contribute to the solution of many problems of modern society such as crime abatement, conservation of natural resources, overcrowding in urban areas, transportation, pollution, and public health; all are areas of difficulty that are susceptible to the well-trained technologist.

MANAGEMENT OPTION

Management Option The management option is oriented toward the design and control of technical activity such as the management of a manufacturing enterprise and the supervision of technical function in a business establishment.

COMPUTER OPTION

Computer Option The program in computer technology is designed to produce a graduate with the ability to take absolute control of a computer complex. Programming in several languages, and the organization and association of computer machinery are treated in depth.

ASSOCIATE IN SCIENCE

Associate in Science This program provides students with the first two years of a standard four-year engineering program. Since the University of New Haven courses are fully accredited, the student will be in a position to transfer with advanced standing to the four-year Bachelor program, to the Evening Credit Division of the University, or to another institution. Upon satisfactory completion of the prescribed two-year curriculum in any Engineering major for the Bachelor of Science degree, graduates may receive the Associate in Science in Engineering Science degree. Additional programs leading to the degrees of Associate in Science in Engineering and in Occupational Safety and Hygiene are available. See the Evening Division Bulletin for program details.

BACHELOR OF SCIENCE

The Bachelor of Science program in the various Engineering Majors contains a common Freshman Year with minor variations in the Sophomore Year. Students in Electrical Engineering must choose their major by the beginning of the Sophomore Year. In all other majors the decision must be made by the end of the Sophomore Year. Students who are accepted with deficiencies must remove them before entering the Sophomore Year.

COMMON FRESHMAN YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
E113	English Composition	3	E 201	World Literature I	3
[1]M 115	Mathematical Analysis I	3	M 117	Calculus I	3
HS 121	History of Science	3	IE 102	Introduction to Computers	3
ES 107	Introduction to Engineering	3	PH 108	Physics I	3
[2]CH 103	Introduction to General Chemistry or	3	CH 110	Environmental Chemistry	3
CH 105	General Chemistry I	(4)		Physical Education II	0
PE 111	Physical Education I	0		Total	15
	Total	15 (16)			

[1] Students with sufficient preparation will be placed in Course M 117, and will take Course M 118 in the Spring Semester.

[2] Students will be placed in the appropriate course based on their preparation in Chemistry.

Civil Engineering

CIVIL ENGINEERING

SECOND YEAR

M 118	Calculus II	4	M 203	Calculus III	4
PH 209	Physics II	3	PH 210	Physics III	3
CE 201	Statics	3	CE 202	Mechanics of Materials I	3
E 202	World Literature II	3	ME 101	Engineering Graphics	3
IE 204	Engineering Economics	3	ME 204	Dynamics	3
	Total	16		Total	16

THIRD YEAR

M 204	Differential Equations	4	CE 302	Building Construction	3
CE 203	Surveying I	3	CE 303	Steel Design and Construction	3
CE 301	Transportation Engineering	3	CE 304	Soil Mechanics	3
CE 307	Mechanics of Materials 2 or		CE 306	Hydraulics	3
CE 312	Structural Analysis I	3		Elective, Restricted	3
	Elective, Restricted	3		Elective, Math	3
	Total	16		Total	18

CIVIL ENGINEERING

FOURTH YEAR

CE 314	Concrete Design and Construction	3	CE 501	Design Project	3
CE 402	Water Supply and Power	3	CE 404	Sanitary Engineering	3
CE 407	Contracts and Specifications	3	ME 301	Thermodynamics I	3
EE 223	Principles of Electrical Engineering I	3	EE 336	Instrumentation Electronics	3
	Elective, General Studies	3	EC 133	Principles of Economics I	3
	Elective, Restricted	3		Elective, General Studies	3
	Total	18		Total	18

Selection of Electives

Each student will meet with the Chairman of the Civil Engineering Department during the Spring semester of his second year in order to select the restricted electives which will, together with the required courses, result in a program of maximum benefit to the student.

TOTAL—Bachelor of Science Degree in Civil Engineering: 132 to 133 Semester Hours.

ELECTRICAL ENGINEERING

Electrical Engineering

SECOND YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
M 118	Calculus II	4	M 203	Calculus III	4
PH209	Physics II	3	PH 210	Physics III	3
CE 201	Statics	3	CE 202	Mechanics of Materials I	3
E 202	World Literature II	3	ME 204	Dynamics	3
EE 223	Principles of Electrical Engineering I	3	EE 224	Principles of Electrical Engineering II	3
			EE 253	Electrical Engineering Lab. I	2
	Total	16		Total	18

THIRD YEAR

EE 331	Network Analysis I	3	EE 332	Network Analysis II	3
EE 347	Electronic Devices and Circuits I	3	EE 341	Analog and Digital Computer Applications	3
EE 355	Switching and Logical Design I	3	EE 343	Electromechanical Energy Conversion	3
EE 361	Electromagnetic Theory	3	EE 348	Electronic Devices and Circuits II	3
M 204	Differential Equations	4	EE 349	Elec. Engineering Lab. II	2
	Total	16	EE 351	Elec. Systems Analysis	3
				Total	17

FOURTH YEAR

EC 133	Principles of Economics I	3	EE 453	Elec. Engineering Lab. III	2
	Elective, Math	3	IE 204	Engineering Economics	3
	Elective, Restricted	9		Elective, Free	3
	Elective, General Studies	3		Elective, Restricted	6
	Total	18		Elective, General Studies	3
				Total	17

Selection of Electives

Restricted Electives shall be from Engineering or Science and are to be chosen in consultation with department members and must be approved by the Chairman of the Department of Electrical Engineering.

TOTAL—Bachelor of Science Degree in Electrical Engineering: 132-133 Semester Hours

Industrial Engineering

SECOND YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
M 118	Calculus II	4	M 203	Calculus III	4
PH 209	Physics II w/Lab.	3	PH 210	Physics III w/Lab.	3
CE 201	Statics	3	CE 202	Mechanics of Materials I	3
E 202	World Literature II	3	ME 101	Engineering Graphics	3
IE 204	Engineering Economics	3	ME 204	Dynamics	3
	Total	16		Total	16

THIRD YEAR

M 204	Differential Equations	4	EC 133	Principles of Economics I	3
	or		IE 234	Production Control	3
M 231	Linear Algebra	(3)	IE 502	Operations Research	3
IE 214	Management Theory	3		Electives, Restricted	6
IE 224	Advanced Fortran Programming	3		*Elective, Math	3
IE 243	Work Analysis	3		Total	18
IE 346	Statistical Analysis	3			
	Total	(15)16			

FOURTH YEAR

EC 350	Economics of Labor Relations	3	IE 443	Facilities Planning	3
IE 233	Cost Control	3	IE 504	Laboratory Thesis	3
EE 223	Principles of Electrical Engineering I	3	EE 336	Instrumentation Electronics w/Lab.	3
	Elective, General Studies	3		Elective, General Studies	3
	Elective, Restricted	3		Elective, Restricted	3
	Elective, Free	3		Total	18
	Total	18			

* IE 347 Probability Analysis or any 300 or 400 series math course.

Selection of Electives

Restricted electives are to be chosen in consultation with department members and must be approved by the Chairman of the Department of Industrial Engineering. Students may secure restricted elective guide sheets from the Reception Office or from the department chairman.

TOTAL—Bachelor of Science Degree in Industrial Engineering: 131-133 Semester Hours

Materials Engineering

SECOND YEAR

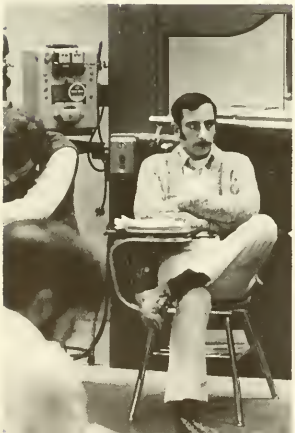
	Fall	Sem. Hrs.		Spring	Sem. Hrs.
M 118	Calculus II	4	M 203	Calculus III	4
PH 209	Physics II	3	PH 210	Physics III	3
CE201	Statics	3	CE 202	Mech. of Materials II	3
E 202	World Literature II	3	ME 101	Engineering Graphics	3
IE 204	Engineering Economics	3	ME 204	Dynamics	3
	Total	16		Total	16

THIRD YEAR

MT 219	Principles of Solids I	3	MT 220	Principles of Solids II	3
ME 301	Thermodynamics I	3	MT 304	Mechanical Behavior of Materials	3
CH 105	General Chem. I	4			
M 204	Differential Equations	4	EC 133	Prin. of Economics I	3
	Elective, Restricted	3		Elective, Chemistry	(3) or 4
				Elective, Materials	3
	Total	17		Total	(15) or 16

FOURTH YEAR

MT 331	Non-Ferrous Metallurgy	3	MT 500	Research Project	3
MT 342	Steels & Their Heat Treatment	3	EE 336	Instrumentation Elect.	3
				Elective, General Studies	3
EE 223	Prin. of Elect. Engrg. I	3		Elective, Free	3
	Elective, General Studies	3		Elective, Restricted	6
	Elective, Materials	3			
	Elective, Restricted	3		Total	18
	Total	18			



Selection of Electives

Each student will meet with the Chairman of the Materials Engineering Department during the Spring term of his second year to select the restricted electives which will result in a program of maximum benefit to the student.

TOTAL—Bachelor of Science Degree in Materials Engineering: 130-131 Semester Hours

SECOND YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
M 118	Calculus II	4	M 203	Calculus III	4
PH 209	Physics II	3	PH 210	Physics III	3
CE 201	Statics	3	CE 202	Mech. of Materials II	3
E 202	World Literature II	3	ME 101	Engineering Graphics	3
IE 204	Engineering Economics	3	ME 204	Dynamics	3
	Total	16		Total	16

THIRD YEAR

ME 303	Prin. of Engrg. Analysis	3	ME 302	Thermodynamics II	3
M 204	Differential Equations	4	ME 311	Machine Elements	3
ME 301	Thermodynamics I	3	ME 315	M.E. Lab. I	2
CE 307	Mech. of Materials II	3	ME 321	Fluid Mech.	3
	Elective, General Studies	3		Elective, General Studies	3
				Elective, Restricted	3
	Total	16		Total	17

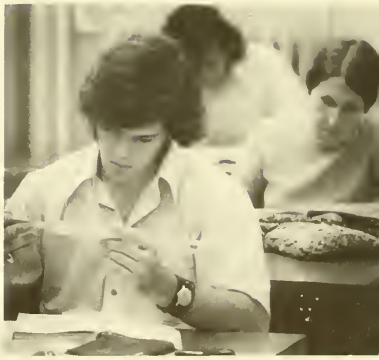
FOURTH YEAR

ME 404	Heat & Mass Transfer	3	ME 415	M.E. Lab. II	2
MT 219	Principles of Solids I	3	EE 336	Instrumentation Elect.	3
EE 223	Prin. of Elec. Engrg. I	3	EC 133	Prin. of Economics I	3
	Electives, Restricted	9		Elective, Free	3
				Electives, Restricted	6
	Total	18		Total	17

Selection of Electives

Restricted electives are limited to scientific or technical fields and must be approved by the Department Chairman. Students are welcome to consult the chairman early in their studies for the purpose of planning a suitable program. More detailed information about requirements and electives is available from the Mechanical Engineering Department.

TOTAL—Bachelor of Science Degree in Mechanical Engineering: 130-131 Semester Hours



INDUSTRIAL TECHNOLOGY

MANAGEMENT OPTION

Industrial Technology Management Option

FIRST YEAR

Fall		Sem. Hrs.	Spring		Sem. Hrs.
E 113	English Composition	3	E 201	Literature I	3
M 115	Math Analysis I	3	PH 104-106	Physics II	4
IE 102	Intro. to Comp.	3	M 117	Calculus I	3
PH 103-105	Physics I	4	EC 133	Economics I	3
ME	Graphics I	3	ME	Graphics II	3
	Total	16		Total	16

SECOND YEAR

CH 103	Intro. to Gen. Chemistry/ Lab.	3	CH 105	Chemistry/Lab.	4
M 118	Calculus II	4	CE 202	Strength of Materials	3
CE 201	Statics	3	ME 204	Dynamics	3
E 202	Literature II	3	A 111	Accounting	3
EE 223	Elec. Engr. I	3	IE 223	Personnel Administration	3
IE 204	Engr. Economics	3		Total	16
	Total	19			

THIRD YEAR

IE 226	Numerical Analysis I	3	EE 336	Instrumentation	3
IE 214	Management Theory	3	IE 234	Production Control	3
IE 224	Programming	3	IF 347	Probability Analysis	3
IE 346	Statistical Anal.	3	EC 350	Economics of Labor Relations	3
	General Studies Elective	3	IE 233	Cost Control	3
				General Studies Elective	3
	Total	15		Total	18

FOURTH YEAR

IE 227	Numerical Analysis II	3	IE 245	Work Analysis II	3
IE 243	Work Analysis I	3	IE 502	Operations Research	3
IE 443	Facilities Planning	3	IE 504	Lab. Thesis	3
	Restricted Elective	3		Restricted Elective	3
	Elective	3		Elective	3
	Total	15		Total	15

SELECTION OF ELECTIVES

All electives are to be chosen in consultation with department members and must be approved by the Chairman of the Department of Industrial Engineering. Students may secure restrictive elective guide sheets from the department secretary.

TOTAL—Bachelor of Industrial Technology Degree: 130 Semester Hours Minimum

Industrial Technology Computer Option

FIRST YEAR

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
E 113	English Composition	3	E 201	Literature I	3
M 115	Math. Analysis I	3	M 117	Calculus I	3
IE 106	Intro. to Computers I	3	IE 107	Intro. to Computers II	3
PH 103-105	Physics I	4	IE 204	Engineering Economics	3
EC 133	Economics	3	PH 104-106	Physics II	4
	Total	16		Total	16

SECOND YEAR

CH 103	Intro. to Chemistry/Lab.	3	CH 105	Chemistry/Lab.	4
M 118	Calculus II	4	IE 226	Numerical Analysis I	3
IE 228	Intro. to Fortran	3	EE 336	Instrumentation	3
E 202	Literature II	3	IE 229	Advanced Fortran	3
EE 223	Elec. Engr. I	3	IE 230	Intro. to Cobol	3
	Total	16		Total	16

THIRD YEAR

IE 227	Numerical Analysis II	3	IE 233	Cost Control	3
IE 347	Probability Anal.	3	IE 234	Production Control	3
A 111	Accounting I	3	IE 502	Operations Research	3
IE 346	Statistical Anal.	3	IE 332	PL/1 and RPG	3
IE 331	Advanced Cobol	3	EE 356	Logic Design	3
EE 355	Switching Design	3		Total	15
	Total	18			

FOURTH YEAR

IE 334	Assembler Language	3	IE 336	Hardware Operation	3
IE 223	Personnel Administration	3	EC 350	Economics of Labor Relations	3
IE 335	Simulations—Appl.	3			
IE 214	Management Theory	3	IE 504	Laboratory Thesis	3
	General Studies Elective	3		General Studies Elective	3
	Restricted Elective	3		Restricted Elective	3
	Total	18		Total	15

SELECTION OF ELECTIVES

All electives are to be chosen in consultation with department members and must be approved by the Chairman of the Department of Industrial Engineering. Students may secure restrictive elective guide sheets from the department secretary.

TOTAL—Bachelor of Industrial Technology Degree: 130 Semester Hours Minimum

COURSE DESCRIPTIONS — UNDERGRADUATE SCHOOLS

ACCOUNTING Jeffrey L. Williams, Chairman

A 111 Introductory Accounting. Credit, 3 semester hours.

Prerequisite to all other courses in accounting.
A fundamental approach to the concepts, principles and procedures embodied in the financial accounting system. Emphasis is placed upon both the preparation of financial statements of merchandising business concerns via a procedural understanding of the financial accounting cycle and the interpretation of such statements.

A 112 Introductory Accounting II. Credit, 3 semester hours.

Prerequisite: A-111.
A continuation of the fundamental approach and material covered in A 111 coupled with both the financial and managerial accounting functions for manufacturing business concerns.

A 114 Municipal Accounting. Credit, 3 semester hours.

Prerequisite: A 111.
An introduction to accounting principles, standards, and procedures applicable to state and local governments. The emphasis is on municipal government.

A 221 Intermediate Accounting I. Credit, 3 semester hours.

Prerequisite: A 112.
A rigorous extension of the concepts, principles and procedures of corporate financial accounting, fundamentally introduced in A 111 and A 112. Given an emphasis upon reporting financial position and results of operations, the principles governing and the procedures implementing accounting valuations for current assets, investments and funds, fixed assets-tangible, fixed assets-intangible, other assets and deferred charges are developed and examined. Throughout, reference is made to the relevant publications of professional accounting societies and accounting associations.

A 222 Intermediate Accounting II. Credit, 3 semester hours.

Prerequisite: A 221.
Continuing the emphasis upon corporate financial reporting established in A 221, the principles and procedures associated with accounting valuations for current liabilities, long term liabilities, deferred credits and stockholders equity are developed and examined. Additional topics include income tax allocation, price level changes, accounting changes, statement of changes in financial position, pensions and leases, installment sales and consignments. Throughout, reference is made to the relevant publications of professional accounting societies and accounting associations.

A 223 Cost Accounting I. Credit, 3 semester hours.

Prerequisite: A 112.
An indepth examination of the financial accounting principles and procedures underlying the determination and reporting of product costs for manufacturing concerns. Emphasis is placed upon the concepts and classifications of product costs (direct material, direct labor and manufacturing overhead) as well as the recording and accumulating of such costs within job order and process accounting systems.

A 224 Cost Accounting II. Credit, 3 semester hours.

Prerequisite: A 223.
Continuing the underlying emphasis on product cost determination established in A 223, the tools and techniques of profit planning and cost analysis are introduced and integrated. Topics include budgets, standard costs, direct costing, cost-volume-profit analysis, differential and comparative cost analysis, by-product costs, transfer pricing, pricing methods and capital budgeting.

A 331 Advanced Accounting I. Credit, 3 semester hours.

Prerequisite: A 222.
A concentrated examination of financial accounting concepts, principles and procedures applicable to partnership and consolidation accounting. Partnership topics include: formation and division of income, changes in ownership and liquidation. Consolidation topics include comprehensive coverage of the cost and equity methods as well as other issues (purchase versus pooling of interests, entity theory, etc.) related to consolidation accounting. Other financial accounting topics of a specialized nature not previously covered can be included at the discretion of the instructor.

A 332 Advanced Accounting II.
Credit, 3 semester hours.

Prerequisite: A 222.
An intensive approach to financial accounting theory by means of particular emphasis upon financial accounting principles as pronounced by the authoritative boards of professional accounting societies and as found in the literature generated by professional accounting associations. Extensive use is made of the publications of professional accounting societies and accounting associations.

A 333 Auditing I.
Credit, 3 semester hours.

Prerequisite: A 222.
Evaluation of the effectiveness of the various accounting systems and procedures as they relate to internal control. Auditing procedures to test reliability are developed, followed by teachings of prerequisites that are to be met for auditing standards applicable to "field work." A practice case links the course to practice.

A 334 Auditing II.
Credit, 3 semester hours.

Prerequisite A 333.
Introduction to the profession of auditors (internal and independent). Intricacies and variety of audit report presentations. Full coverage of auditing standards and latest developments in the field of auditing. Principle of internal control questionnaire and audit program designs.

A 335 Income Tax Procedures I.
Credit, 3 semester hours.

Prerequisite: A 112.
The law and the procedures for individual income tax returns. Includes the determination of gross income, ordinary gains and losses, capital gains and losses, dividends, deductions of all kinds, and withholding.

A 336 Income Tax Procedures II.
Credit, 3 semester hours.

Prerequisite: A 335.
Continuation of the law and procedures to cover installment sales, inventories, accounting, etc., and handling taxes of partnerships, estates and trusts, and corporations, including reorganizations, personal holding companies, etc. Processes of filing returns, paying taxes, and getting refunds. Coverage of Social Security, Federal Estate and Gift taxes.

A 339 Managerial Accounting.
Credit, 3 semester hours.

Prerequisite: A 224.
The underlying principles, procedures and techniques of accounting analysis applicable to the managerial functions of planning, controlling and evaluating the economic performance of the profit oriented business unit.

A 341 Financial Decision Making.
Credit, 3 semester hours.

Prerequisite: BA 113 and A 339.
The principles and procedures associated with optimal decision making within the functional areas of finance. Emphasis is placed upon an understanding of the applications and limitations of decision models for the investment, financing, and dividend decisions of the profit oriented business unit.

ART Elizabeth J. Moffitt, Chairman

ART 101-102 Introduction to Studio Art.
Credit, 6 semester hours.

This course provides a foundation to further study in the visual arts and is designed to heighten the sensitivity and awareness of the individual. There will be an exploration of the expressive potential of a variety of materials. Problems in drawing, painting, and design. Contemporary art forms will be viewed in their historical relationship to those of the past.

ART 122 Layout and Printing Techniques.
Credit, 3 semester hours.

Techniques of layout, lettering, and design in relation to printing methods.

ART 201 Drawing and Painting I.
Credit, 3 semester hours.

Problems in drawing will include exercises in coordination of hand and eye, manipulation of line for articulation of space and form, perspective, figure drawing and experience with various drawing materials. In painting, problems in pictorial composition will involve the manipulation of form and color using a variety of pigments and materials.

ART 203 Commercial Art.
Credit, 3 semester hours.

Problems of graphic arts and advertising. Relations between the arts and methods of communication. An introduction to the fields of advertising, illustration, and editorial art; the role of the advertising agency; and the analysis of ideas for visual statement.

ART 204 Commercial Art II.
Credit, 3 semester hours.

Prerequisite: Art 203.
The organization and presentation of a project which demonstrates the student's ability to apply theory on a professional level. Work for presentation in the form of a portfolio is developed through individual instruction and criticism.

ART 205 Ceramics.
Credit, 3 semester hours.

Investigation of the qualities inherent in clay as a medium of expressive design; structural qualities of clay as related to plastic form and volume.

Laboratory Fee: $18.00.

ART 211-212 Design I and II.
Credit, 6 semester hours.

Exploration of basic visual elements; line, color, texture, shape, size, volume, space, and the psychic response they elicit. Organization of visual elements in effective design. Interaction of color.

ART 231 History of Art to the Renaissance.
Credit, 3 semester hours.

World art as an expressive and social phenomenon from its earliest beginnings, through religious and cultural cycles, to the visual developments of the Renaissance.

ART 232 History of Modern Art.
Credit, 3 semester hours.

Art from the Renaissance to the Twentieth Century in Europe and America; a continuation of Art 231.

ART 301 Drawing and Painting II.
Credit, 3 semester hours.

Further study in two dimensional formulations by means of exploitation of form and color for expressive content. Experimentation with various drawing techniques for maximum effectiveness. Figure drawing.

ART 302 Figure Drawing.
Credit, 3 semester hours.

Prerequisite: Art 201.

Further study of graphic articulations using a variety of materials: pen, ink, charcoal, pencil, mixed media. Experimentation with techniques and refinement of means. Study of forms in nature. Life drawing.

ART 311 Introduction to Sculpture I.
Credit, 3 semester hours.

The exploration of three dimensional materials for maximum effectiveness in expressive design. Experimentation with clay, plaster, wood, stone, canvas, wire screening, metal, found objects, etc.

Laboratory Fee: $18.00.

ART 312 Lettering.
Credit, 3 semester hours.

Prerequisite: Art 211.

Design and execution of basic hand lettering with pen and brush; utilization of hand lettering and type in the design of printed matter; use of letter forms as an element of visual design.

ART 313-314 Photography I and II.
Credit, 6 semester hours.

A course designed to explore the technical aspects of photography as a means for the development of the student's sensitivity to the image as an art form. Laboratory course. Technical demonstrations and experimental laboratory techniques. Emphasis on black and white. Group criticisms. Field trips.

Laboratory Fee: $18.00.

ART 315 Printmaking.
Credit, 3 semester hours.

The expressive potential of the graphic image through the techniques of silkscreen, wood cut, wood engraving, linoleum blockprint, collotype, nonotype, and photo-silkscreening. Problems in black and white and color.

Laboratory Fee: $18.00.

ART 316 Introduction to Sculpture II.
Credit, 3 semester hours.

A continuation of Art 311, Introduction to Sculpture I, with further exploration of three-dimensional materials and the possibilities they present for creative visual statements.

Laboratory Fee: $18.00.

ART 331 Contemporary Art.
Credit, 3 semester hours.

Art as an expressive and social phenomenon from 1945 through the developmental happenings of the present.

ART 401 Studio Seminar I.
Credit, 1-4 semester hours.

Prerequisites: Art 101-102, Art 201, Art 302 or Art 313, and Art electives.

Drawing on his development through his previous study the student will concentrate on major projects in areas of his choice.

ART 402 Studio Seminar II.
Credit, 1-4 semester hours.

Prerequisite: Art 401.

Continuation of Studio Seminar I.

ART 599 Independent Study.
Credit, 1-3 semester hours per semester with a maximum of 12 semester hours.

Prerequisites: Consent of faculty member and chairman of department. Opportunity for the student under the direction of a faculty member to explore an area of interest to him. This course must be initiated by the student.

BUSINESS ADMINISTRATION

Ward Theilman, Chairman

BA 101 Business Law I.
Credit, 3 semester hours.

Contract law as a foundation for anticipating legal difficulties and making the best use of legal advice. Functional and policy problems in the legal resolution of a controversy. The origin and development of common, statutory, and constitutional law and of the functioning of the judicial system.

BA 102 Business Law II.
Credit, 3 semester hours.

Prerequisite: BA 101.
Agency, partnerships, corporations, and legal aspects of marketing.

BA 105 Principles of Marketing.
Credit, 3 semester hours.

The fundamental functions of marketing involving the basic principles of the flow of goods and services from producer to consumer. Marketing methods, policies, and problems of the manufacturer, wholesaler, and retailer are reviewed through analysis of channels of distribution, price policies, competition, and market information.

BA 107 Advertising and Promotion.
Credit, 3 semester hours.

Prerequisite: BA 105 or equivalent.
The design, management, and evaluation of the various communications programs involved in marketing and public relations.

BA 113 Business Finance.
Credit, 3 semester hours.

Prerequisite: A 111 or Instructor's consent.
Brief study of the unincorporated business enterprise. The modern corporation. Basic security types of stocks and bonds, capital structure, promotion, investment, banking, government regulation, administration, sources and uses of working capital, expansion, combinations, mergers, refinancing and recapitalization, and failure and reorganization.

BA 118 Business Mathematics I.
Credit, 3 semester hours.

This course emphasizes basic mathematical techniques as they apply to business: logarithmic functions, progressions, exponential growth, and the mathematics of finance; breakeven and inventory models; and matrix algebra.

BA 125 Management and Organization.
Credit, 3 semester hours.

The business organization, stressing the conceptual foundations of business. Ethical and behavioral issues in organizing. The authority, responsibility, and accountability in organization and managment which underlie businesses of every legal form.

BA 128 Quantitative Techniques in Managament.
Credit, 3 semester hours.

Prerequisite: BA 118.
With emphasis on more rigorous applications of quantitative techniques in Business, this course stresses probability theory and probabilistic decision models, systems of linear related analysis.

BA 203 Physical Distribution Management.
Credit, 3 semester hours.

Prerequisite: BA 105.
Planning organization, management, and operation of logistic systems, with emphasis on the effective use of transportation to meet the objectives of a business.

BA 216 Statistics.
Credit, 3 semester hours.

Prerequisite: BA 128 or equivalent.
A course in elementary statistical concepts such as frequency distributions, measure of central tendency, measures of variability, the normal curve, point and interval estimation, sampling distributions, and simple decision theory.

BA 221 Law of Sales.
Credit, 3 semester hours.

Prerequisite: BA 102.
This course is an advanced study of Business Law comprising: bailments; duties and liabilities of bailees, common carriers, and warehousemen; the laws governing the rights of parties engaged in the transfer of personal property. Questions of title, risks assumed, rights of creditors, express and implied warranties, buyers and sellers remedies, together with the business background out of which such relations arise, are all considered.

BA 222 Law of Commercial Paper and Bankruptcy.
Credit, 3 semester hours.

Prerequisite: BA 221.
This course is a study of the Negotiable Instruments Law, dealing with negotiable promissory notes, bills of exchange, and bank credits with an analysis of their form and function in commercial transactions. A brief survey of bankruptcy procedure under the federal bankruptcy laws is included.

BA 227 Risk and Insurance.
Credit, 3 semester hours.

Prerequisite: BA 125.
The importance of risk in business affairs; risk situations analyzed; the different methods of meeting risk considered; extended consideration given to the various forms of insurance coverage.

BA 228 Procurement Management.
Credit, 3 semester hours.

Prerequisite: BA 105.
A course designed to include the examination of the functions of materials supervision and management as well as a study of the purchasing process.

BA 229 Financial Management.
Credit, 3 semester hours.

Prerequisite: BA 113.
Analytical techniques for dealing with financial problems and their application to corporate financial management. Capital budgeting, cost of funds, capital structure, valuation, and some aspects of investment problems.

BA 230 Investments.
Credit, 3 semester hours.

Prerequisite: BA 113 or EC 134 or Instructor's consent.
Investment media and institutions in the capital markets, the determination of investment values, and the analytical tools of investment appraisal and portfolio management.

BA 231 Industrial Relations.
Credit, 3 semester hours. (SO 411)

Prerequisite: BA 125.
Human factors in the management function including union-management relations, history of human relations, individual and group productivity, the company, and the community.

BA 250 Quantitative Analysis.
Credit, 3 semester hours.

Prerequisite: BA 128.
Basic analytical geometry and functions, and differential and integral calculus used to solve business problems.

BA 301 Retailing.
Credit, 3 semester hours.

Prerequisite: BA 105.
Modern merchandising methods used by retail stores, including store organization, buying, pricing, receiving, marketing, publicity, selling, record keeping, and stock control.

BA 302 Industrial Marketing.
Credit, 3 semester hours.

Prerequisite: BA 105.
Practices and policies in the distribution of industrial goods, including purchasing practices, market analysis, channels of distribution, distribution and pricing policies, competitive practices, and operating costs.

BA 312 International Business.
Credit, 3 semester hours.

Prerequisite: BA 105.
Principles of International Marketing; the theory of trade and commercial policy; foreign exchange rates, exchange control, and foreign investments; world trade in commodities; methods of exporting and importing; and an evaluation of comparative distribution systems.

BA 315 Marketing Management.
Credit, 3 semester hours.

Prerequisite: BA 105.
Policies, practices, and problems in the field of marketing management; product development, product planning for promotion; market investigation, quantitative and qualitative; pricing and price policies; planning the marketing effort; and control of marketing operations.

BA 316 Sales Management.
Credit, 3 semester hours.

Prerequisite: BA 105.
Problems and resulting policies encountered in the management of a sales organization. Qualifications and duties of the sales manager, departmental organization; recruiting, selecting, training, stimulating, supervising, compensating, and routing salesmen; and territories, quotas, expenses, promotions, and policies.

BA 317 Small Business Management.
Credit, 3 semester hours.

Prerequisite: Junior Standing.
This course is designed to enable the student, who is considering a career of self-employment, to examine realistically some of the characteristics, opportunities, risk-taking and decision making in new business, new enterprises or self-employment ventures.

BA 333 Advanced Statistics.
Credit, 3 semester hours.

Prerequisite: BA 216.
A course stressing advanced statistical concepts and statistical methods relating to business. Topics include tests of hypotheses, analysis of variance, sample designs, correlation and linear regression, index numbers, and time series analysis.

BA 342 Marketing Research.
Credit, 3 semester hours.

Prerequisites: BA 105 and BA 216.
Research as a component of the marketing information system. Definition of objectives, selection of appropriate research designs and survey techniques, sampling methods, analysis and interpretation of primary and secondary data, and management of the marketing research function, including value analysis and budget considerations.

BA 449 Independent Study.
Credit, 3 semester hours.

Independent study to be performed in a project of interest to the student and under direction of a faculty member to be designated by the department chairman. Project, student, and faculty director must be approved by both the department chairman and the Dean of the Business School.

BA 489 Internship.
Credit, 3 semester hours.

Prerequisites: Senior Standing and permission of the Department Chairman.
This program provides monitored field experience with business and industry subject to academic guidance and review.

BA 510 Managerial Economics.
Credit, 3 semester hours.

Prerequisite: Senior standing and EC 134 and BA 113.
Integrates principles and concepts from the several business and economic fields to exemplify decision processes and strategies applicable to the management of the individual firm.

BA 512 Seminar.
Credit, 3 semester hours.

Prerequisite: Senior standing.
A rigorous examination of competing concepts of the role of business in society. A capstone, integrative course relating the firm to its environment. Issues arising from aggregate social, political, legal, and economic factors are stressed.

CHEMISTRY William H. Nyce, Chairman

CH 103 Introduction to General Chemistry w/Lab.
Credit, 3 semester hours.

Introductory course in inorganic chemistry dealing with elements, compounds, reactions, atomic structure, chemical bonding solutions, and nuclear reactions. Laboratory work involves weighing and experiments related to the material covered in lectures.

Laboratory Fee: $18.00.

CH 104 Elementary Organic Chemistry.
Credit, 3 semester hours.

Prerequisite: CH 103 or permission of the department.
A one-semester introduction to one of the major fields of chemistry designed for students not majoring in chemistry. Nomenclature, structure, and the principal reactions of aliphatic and aromatic organic chemistry will be studied.

CH 105 General Chemistry I w/Lab.
Credit, 4 semester hours.

Prerequisite: CH 103 or one high school unit of chemistry, or written qualifying examination.
Application of nuclear reactions, thermochemistry, electrochemistry, the production and properties of metals, the properties of the halogen and sulfur groups, and organic chemistry. Laboratory work related to the material covered.

Laboratory Fee: $18.00.

CH 106 General Chemistry II w/Lab.
Credit, 4 semester hours.

Prerequisite: CH 105.
Chemical equilibria, chemical bonding, solutions, the chemistry of nitrogen, carbon, silicon, and boron; the use of spectroscopy to determine structure of compounds. Laboratory work includes experiments in qualitative analysis.

Laboratory Fee: $18.00.

CH 108 Elementary Organic Chemistry Laboratory.
Credit, 1 semester hour.

Prerequisite: CH 103.
A laboratory course designed to accompany CH 104. The principal operations of organic synthesis such as refluxing, distillation, filtration, and crystallization are studied and applied in a number of simple preparations.

Laboratory Fee: $18.00.

CH 110 Environmental Chemistry.
Credit, 3 semester hours.

Prerequisites: CH 105 or consent of instructor.
Chemical method of solving pollution problems in three major areas: the air environment, the water environment, and in the treatment of solid wastes. In each area process flow sheets, chemical reactions, and process equipment necessary for the reduction of pollutants will be studied. Recommendations in these areas will also be reviewed.

CH 115 History of Chemistry.
Credit, 3 semester hours.

Prerequisite: CH 103 or permission of instructor.
The history of chemistry beginning with ancient civilizations through the middle ages and the alchemist's search for gold. The discovery of the various elements and the periodic table. The lives of chemistry's great men and women, chemistry's contribution to the atomic age.

CH 120 Chemistry of Addicting and Hallucinogenic Drugs. Credit, 3 semester hours.

Prerequisite: CH 103 or permission of instructor.
The properties, dosages, preparations, and reactions of the addicting, and hallucinogenic drugs. Alcohol, caffeine, nicotine, sedatives, stimulants, tranquilizers, LSD, mescaline, cannabis, narcotics, and antidepressants.

CH 211 Quantitative Analysis w/Lab. Credit, 4 semester hours.

Prerequisite: CH 106.
Theory and laboratory training in the preparation of solutions, volumetric and gravimetric analysis, and the use of special laboratory instruments.

Laboratory Fee: $18.00.

CH 301-302 Organic Chemistry w/Lab. Credit, 8 semester hours.

Prerequisite: CH 106.
The common reactions of aliphatic and aromatic chemistry, emphasis on reaction mechanisms. Laboratory assignments on the technique needed in organic synthesis.

Laboratory Fee: $18.00 per semester.

CH 321-322 Plastics and Polymer Chemistry. Credit, 6 semester hours.

Prerequisites: CH 106, CH 302.
All phases of the plastics and polymers field, including the chemistry involved, methods, properties of the plastics, and uses of the various materials.

CH 331 Essentials of Fire Chemistry w/Lab. Credit, 3 semester hours (same as FS 301).

Prerequisite: Junior Classification.
The examination of the chemical requirements for combustion, the chemistry of fuels and explosive mixtures, and the study of the various methods of stopping combustion of fires. Analysis of the properties of materials affecting fire behavior. Detailed examination of the basic properties of fire.

Laboratory Fee: $18.00.

CH 332 Fire Protection Fluids and Systems w/Lab. Credit, 3 semester hours (same as FS 303).

Prerequisite: CH 331.
Chemical properties of fluids used in fire suppression systems and operations. Design of water supply and distribution for fire protection. Laboratory study of operational and hydraulics problems.

Laboratory Fee: $18.00.

CH 341 Instrumental Methods of Analysis w/Lab. Credit, 4 semester hours.

Prerequisites: CH 106, CH 211.
The theory of various instrumental methods, including visible ultraviolet and infrared spectroscopy, gas chromatography, mass spectrometry, and nuclear magnetic resonance spectroscopy. Laboratory identification of compounds by the methods discussed in the lectures.

Laboratory Fee: $18.00.

CH 351 Qualitative Organic Chemistry w/Lab. Credit, 4 semester hours.

Prerequisite: CH 302.
A one-semester laboratory course dealing with the systematic identification of organic compounds.

Laboratory Fee: $18.00.

CH 401-402 Advanced Organic Chemistry. Credit, 6 semester hours.

Prerequisite: CH 302.
The mechanism of organic reactions, advanced problems in synthetic organic chemistry, and special topics such as stereochemistry and photochemistry.

CH 411 Arson Investigation w/Lab. Credit, 3 semester hours (same as FS 402)

Prerequisite: CH 332.
Methods used in starting fires and methods of detection of fires started by arsonists. Instrumental methods that may be used to assist in the investigation of fires started under suspicious circumstances.

Laboratory Fee: $18.00 per semester.

CH 421-422 Advanced Inorganic Chemistry w/Lab. Credit, 8 semester hours.

Prerequisite: CH 431. Corequisite: CH 432.
Modern structural concepts, reaction mechanisms, the application of principles of physical chemistry and bonding theory in inorganic chemistry.

Laboratory Fee: $18.00 per semester.

CH 431-432 Physical Chemistry w/Lab. Credit, 8 semester hours.

Prerequisites: CH 106, PH 202, and M 203.
Fundamental laws of gases, thermodynamics, the theory of atomic and molecular structure, kinetics, and phase equilibria. Laboratory work enables the student to evaluate this subject by studying physical and chemical data.

Laboratory Fee: $18.00 per semester.

CH 433 Advanced Physical Chemistry. Credit, 3 semester hours.

Prerequisite: CH 432.
Emphasis on the fundamentals of quantum mechanics, statistical mechanics, molecular bonding theory, and spectroscopy. Offered only in the evening.

CH 441 Analytical Chemistry w/Lab. Credit, 4 semester hours.

Prerequisite: CH 431. Corequisite: CH 432.
Application of instrumental methods to inorganic and organic methods of analysis, including mass, ultraviolet and infrared spectrophotometry, chromatography, and electroanalytical analysis.

Laboratory Fee: $18.00.

CH 451-452 Thesis for Undergraduate Chemistry Majors w/Lab. Credit, 4 semester hours.

Prerequisites: CH 302, CH 432.
An original investigation in the laboratory under the guidance of a member of the department. Oral discussion of the completed work before the staff at the end of the second semester. Final thesis report. Departmental approval required.

Laboratory Fee: $18.00 per semester.

CH 461 Chemical Spectroscopy: Technique. Credit, 3 semester hours.

Prerequisite: CH 432.
Introduction to the elementary theory with emphasis on techniques and interpretation of data obtained in applications of infrared, Raman, visible ultraviolet, nuclear quadrupole, electron spin, and nuclear magnetic resonance spectroscopy to the solution of chemical problems. Offered only in the evening.

CH 511-512 Seminar I and II. Credit, 2 semester hours.

Prerequisites: CH 302, CH 432.
Reports and discussions in various fields of chemistry reviewed by students and staff.

CH 599 Independent Study. Credit, 1-3 credit hours per semester with a maximum of 12.

Prerequisites: Consent of faculty member and chairman of department. Opportunity for the student under the direction of a faculty member to explore an area of interest to him. This course must be initiated by the student.

Plant Visitations. Credit, none.
Open to junior and senior chemistry majors. Visits to plants in the area to investigate plant and laboratory facilities in the chemical industry.

SC 361-362 Biochemistry w/Lab. Credit, 8 semester hours.

See description under Science and Biology.

CIVIL ENGINEERING John C. Martin, Chairman

CE 201 Statics. Credit, 3 semester hours.

Prerequisites: PH 108 and M 118 (Note: M 118 may be taken concurrently.)
Composition and resolution of forces in two and three dimensions. Equilibrium of forces in stationary systems. Analysis of trusses. Centroids and second moments of areas, distributed forces, friction, shear and bending moment diagrams.

CE 202 Mechanics of Materials I. Credit, 3 semester hours.

Prerequisite: CE 201.
Elastic behavior of structural elements under axial, flexural, and torsional loading. Stress in and deformation of members, including beams. Lectures supplemented with laboratory exercises.

CE 203 Surveying I. Credit, 3 semester hours.

Theory and practice of engineering measurements using tape, level, and transit. Practice in topographic mapping, making of profiles, and computations to determine areas of land volumes of earthwork.

CE 204 Water Supply and Sanitary Engineering. Credit, 3 semester hours.

Introduction to the principles of water supply and waste treatment and disposal systems. Course covers, in a qualitative manner, topics in CE 402 and CE 404. This course cannot be taken, for credit, by Civil Engineering majors.

CE 301 Transportation Engineering. Credit, 3 semester hours.

Development, organization, administration, and interrelation of transportation systems and facilities, including highways, railroads, airport, rapid transit systems, waterways, and pipe lines. Emphasis placed on economics of location of resources, industry, and population.

CE 302 Building Construction. Credit, 3 semester hours.

Initiation into the planning and anatomy of buildings, materials available and their uses, some principles of construction procedures, general estimating of costs, and relative merits of various types of construction.

CE 303 Steel Design and Construction. Credit, 3 semester hours.

Prerequsite: CE 202.
Analysis, design, and construction of steel structures. Design of frames, members, connections, and other related topics. Tension members, compression members, beams, girders, trusses, and rigid frames. Fabrication and erection, including shop practice.

CE 304 Soil Mechanics. Credit, 3 semester hours.

Prerequisites: M 203 and CE 202.
Structural composition of the earth's crust and the mechanics of its formation. Soil classifications and physical properties are related to the principles underlying the behavior of soils subjected to various loading conditions. Subsurface exploration and laboratory exercises.

CE 305 Highway Engineering. Credit, 3 semester hours.

Prerequisite: CE 301.
Study of traffic, methods of making traffic surveys, safety and accident records, and methods of traffic control. Emphasis on planning of major highways, intersections, and urban streets. Study of pavements, drainage, and general administration and operation.

CE 306 Hydraulics. Credit, 3 semester hours.

Prerequisite: ME 204.
The mechanics of fluids and fluid flow. Laminar and turbulent flow. Flow in pipes and open channels. Orifices and weirs. Fluid pressures. Wave action and erosion. Lectures supplemented with laboratory demonstrations.

CE 307 Mechanics of Materials 2. Credit, 3 semester hours.

Prerequisite: CE 202.
Elastic and plastic behavior of structural elements such as beams, columns, and shafts under direct and combined loading. Ultimate strength design, theory of failure, composite member design, and an introduction to statically indeterminate structures.

CE 308 Surveying II. Credit, 3 semester hours.

Prerequisite: CE 203.
A continuation of Surveying I covering principles of field astronomy, hydrographic surveying, and mine and tunnel surveying. An introduction to the general principles and use of photogrammetric surveying. A study of the boundary and legal aspects of Land Surveying including deed research and its application to boundary determination.

CE 312 Structural Analysis I. Credit, 3 semester hours.

Prerequisite: CE 202.
This course presents basic structural engineering topics on the analysis and design of structures. Topics studied are load criteria and influence lines; force and deflection analysis of beams and trusses; analysis of indeterminate structures by approximate methods, superposition and moment distribution. Familiarization with framing systems will be gained by studying existing structures.

CE 314 Concrete Design and Construction. Credit, 3 semester hours.

Prerequisites: CE 307 or CE 312.
Analysis, design, and construction of both plain and reinforced concrete structures. Design, utilizing both working stress and ultimate strength techniques, of beams, slabs, columns, and walls. Construction methods, including forming, reinforcing, concrete placing, prestressing, and precasting will be described.

CE 401 Foundation Design and Construction. Credit, 3 semester hours.

Prerequisite: CE 304 and CE 314.
Design of isolated and combined footings, mats, retaining walls, piers, abutments, pile foundations, and similar structural elements used to safely support buildings, bridges, and other structures.

CE 402 Water Supply and Power. Credit, 3 semester hours.

Prerequisite: CE 306.
Design of water supply, storage, treatment, and distribution systems. Principles of ground water as it pertains to water supply and wells. Introduction to desalination methods, including economic considerations. Water pollution and its control. Principles of hydroelectric power development.

CE 403 City Planning. Credit, 3 semester hours.

Engineering, social economics, political, and legal aspects of city planning. Emphasis placed on case studies of communities in Connecticut. Zoning. Principles and policies of redevelopment.

CE 404 Sanitary Engineering. Credit, 3 semester hours.

Prerequisite: CE 402 or permission of instructor.
Planning of sewer systems, methods of sewage treatment, general construction and operation of plants, handling of industrial and solid wastes. Incineration.

CE 405 Indeterminate Structures. Credit, 3 semester hours.

Prerequisites: CE 307 or CE 312.
Analysis and design of continuous beams, rigid frames, arches, and multi-story structures of concrete and steel. Elastic and plastic design principles.

CE 407 Contracts and Specifications. Credit, 3 semester hours.

Prerequisite: CE 302 or permission of instructor.
Principles of contract formation, execution, and termination. Study of specifications and practice in their preparation. Other legal matters of importance to engineers.

CE 501 Design Project. Credit, 3 semester hours.

Prerequisite: CE 407 or permission of instructor.
Planning and design of an engineering project, starting with map and general requirements as provided by an owner. Preparation of design drawings for the layout and structures. Estimate of cost. Planning construction procedures and schedule.

CE 599 Independent Study. Credit, 1-3 semester hours.

Prerequisites: Consent of faculty member and chairman of department. Opportunity for the student under the direction of faculty member to explore an area of interest to him. This course must be initiated by the student. He must have the consent of the faculty director and the faculty director's chairman.

CRIMINAL JUSTICE L. Craig Parker, Jr., Director
Robert Murillo, Undergraduate Academic Coordinator

CJ 101 Introduction To Criminal Justice. Credit, 3 semester hours.

A survey of the structures and processes in the administration of justice: analysis of the criminal justice sequence including the foundations of criminal law, the elements and procedures of conviction, and the various dispositions available for convicted offenders.

CJ 104 Police Organization and Administration. Credit, 3 semester hours.

Prerequisite: CJ 103.
A detailed study of police organization and procedures within a police department and consideration of the principles of organization and methods adopted by progressive departments to insure effective service to the community.

CJ 105 Interpersonal Relations. Credit, 3 semester hours.

Prerequisite: Junior status required.
Critical factors in relating effectively with others. Crises intervention and techniques employed in relating to deeply distressed individuals. Emphasis on supervisor-supervisee relations, police officer-citizen, counselor-client, etc. Techniques such as Gestlat, role playing, encounter, and Satir approach are stressed.

CJ 107 Correctional Organization and Administration. Credit, 3 semester hours.

Emphasis is placed on the principles of administration in the correctional setting, including budgeting and financial control, recruitment and development of staff, administrative decision-making, public relations, and other correctional administrative functions.

CJ 109 Correctional Treatment Programs. Credit, 3 semester hours.

Various treatment modalities employed in the rehabilitation of offenders. Field visits to various correctional treatment facilities such as half-way houses and community based treatment programs.

CJ 201 Principles of Criminal Investigation. Credit, 3 semester hours.

An introduction to criminal investigation in the field. Conduct at the crime scene, interview and interrogation of witnesses and suspects, the use of informants, and the techniques of surveillance. The special techniques employed in particular kinds of investigation as well as presentation of the police case in court.

CJ 215 Introduction to Forensic Science. Credit, 3 semester hours.

Prerequisite: CJ 201.
A classroom lecture-discussion session and a practical laboratory period. Forensic Science (Criminalistics): the observation, collection, positive identification, and preservation of physical, chemical, and biological evidence for court presentation. The connection between the evidence found at the crime scene and the identification, apprehension, and conviction of the criminal. Fingerprints, identification of hairs and fibers, chemicals, narcotics, blood, semen, glass, soil, and wood. Imprint and impression taking, bullet comparison, document examination, and various photographic methods.

CJ 217-218 American Legal System I and II. Credit, 6 semester hours.

The process through which justice is administered. History of the American Legal System. The Constitution of the United States as it applies to police forces. Also, rules of evidence with attention given to judicial notice, presumptions, the nature of real and circumstantial evidence, burden of proof, province of court and jury, documentary evidence, hearsay evidence, confessions, and admissions of witnesses. Particular emphasis will be given to evidence in criminal cases, presumptions of the penal law, the status of illegally obtained evidence, admission of memorandum book entries, dying declarations, and involuntary confessions.

CJ 221 Juvenile Delinquency.
Credit, 3 semester hours. (see SO 231)

Prerequisites: P 111 and SO 113.
An analysis of delinquent behavior in American society: examination of the theories and social correlates of delinquency, and the socio-legal processes and apparatus for dealing with juvenile delinquency.

CJ 301 Group Dynamics In Criminal Justice.
Credit: 3 semester hours.

Prerequisite: P 111 Psychology.
Focus on issues related to the development and interaction of individuals in groups. Social psychological theory and research as it relates to Criminal Justice.

CJ 302 Behaviorism: Applications In Criminal Justice.
Credit, 3 semester hours.

Prerequisite: P 111 Psychology.
Discussion of basic assumption of learning theory that apply to treatment and educational contexts. Token economies and other behavior modification situations will be explored. Notions of reinforcement, punishment and extinction are stressed.

CJ 303-304 Forensic Science Laboratory I & II.
Credit, 6 semester hours.

Greater attention given to specific topics and to laboratory testing and identifications than in CJ 215. In the classroom the laboratory or practical procedures are outlined and discussed. The laboratory work involves testing and identification of evidence, and more detailed procedures are undertaken than in CJ 215. An example would be the casting of hairs and fibers for microscopic identification of material as containing a narcotic or blood.

Laboratory Fee: $15.00 per semester.

CJ 309 Probation and Parole.
Credit, 3 semester hours.

Prerequisite: Junior status required.
An in-depth analysis of probation, parole and varied alternatives to imprisonment: examination of findings of evaluative research of probation and parole and results with current and experimental non-institutional correctional programs.

CJ 308 Correctional Counseling.
Credit, 3 semester hours.

Prerequisite: Junior status required.
Fundamental psychological counseling theory as it applies to treatment of offenders.

CJ 311 Criminology.
Credit, 3 semester hours.

An introduction to the principles and concepts of Criminology: analysis of the social context of criminal behavior, including a review of criminological theory, the nature and distribution of crime, the sociology of criminal law, and the societal reactions to crime and criminals.

CJ 400 Criminal Justice Problems Seminar.
Credit, 3 semester hours.

Prerequisite: Junior status required.
An examination of theoretical and philosophical issues impinging upon the administration of justice: the problems of reconciling legal and theoretical ideals in various sectors of the criminal justice system with the realities of practice.

CJ 402 Police-Community Relations.
Credit, 3 semester hours.

Prerequisite: SO 113.
Designed to put the police and community into a broad theoretical context. Sociological and environmental implications examined. Attention given to police practices which have caused much public hostility and which have isolated law enforcement from the rest of society.

CJ 404 Criminal Law.
Credit, 3 semester hours.

The scope, purpose, definition, and classification of Criminal Law. Offenses against the person, habitation and occupancy, property and other offenses. Responsibility in general, and limitations on criminal capacity and its modifying circumstances. Special Defenses. The Connecticut Penal Code will also be discussed.

CJ 405 Seminar In Criminal Justice.
Credit: 3 semester hours.

Prerequisite: Senior status required.
An intensive analysis of variable topics of critical relevance in the administration of justice: a seminar exposing the student to a concentrated learning experience conducive to acquiring special expertise in a specific academic area. (The theme for 1973-74 is Violence.)

CJ 498 Research Project.
Credit, 3 semester hours.

Prerequisite: Senior status required.
The student carries out an original research project in a criminal justice setting and reports his study.

CJ 499 Independent Study.
Credit, 1-3 semester hours per semester with a maximum of 12.

Prerequisite: Instructor's consent.
Opportunity for the student, under the direction of a faculty member, to explore an area of interest to him.

CJ 501 Criminal Justice Internship.
Credit, 3 semester hours.

Prerequisite: Senior standing and permission of the department chairman.
This program provides monitored field experience with selected federal, state, or local criminal justice agencies or forensic science laboratories subject to academic guidance and review. BA 449 Independent Study may be substituted with approval of the chairman.

ECONOMICS Franklin B. Sherwood, Chairman

EC 133 Principles of Economics I.
Credit, 3 semester hours.

Foundations of economic analysis, including economic progress; resources, technology, private enterprise, profits, and the price system. Macroeconomics including national income, employment, and economic growth. Price levels, money and banking, the Federal Reserve System, theory of income, employment and prices, business cycles, and problems of monetary, fiscal, and stabilization policy.

EC 134 Principles of Economics II.
Credit, 3 semester hours.

Prerequisite: EC 133.
Microeconomics including markets and market structure and the allocation of resources. The distribution of income, the public economy, the international economy, and current economic problems.

EC 300 Economic History of the U. S.
Credit, 3 semester hours.

Development of American economic life in the various stages of agriculture, trade, industry, finance, and labor. Change of economic practices and institutions, particularly in business, banking, and labor. The changing role of government.

EC 310 Principles of Economic Geography.
Credit, 3 semester hours.

Distribution of resources, industries, and population in relation to physical, economic, and technological factors. Principles of economic location and regional development.

EC 311 Government Regulation of Business.
Credit, 3 semester hours.

Prerequisites: EC 133-134.
An appraisal of public policy toward transportation, trusts, monopolies, public utilities, and other forms of government regulation of economic activity.

EC 314 Public Finance.
Credit, 3 semester hours.

Prerequisites: EC 133-134.
Theory and practice of public taxation. The budgetary process at all levels of government.

EC 320 Mathematical Methods in Economics.
Credit, 3 semester hours.

Prerequisites: M 115 - M 116; or M 127, M 115; or BA 118 - BA 128.
Applications of various mathematical concepts and techniques in macroeconomic and microeconomic analysis. Special emphasis on the design and interpretation of mathematical models of economic phenomena.

EC 336 Money and Banking.
Credit, 3 semester hours.

Prerequisites: EC 133-134.
Nature and functions of money, commercial banking system, Federal Reserve System and the Treasury, monetary theory, financial institutions, international financial relationships, history of money and monetary policy in the United States, and current problems of monetary policy.

EC 340 Microeconomic Analysis.

Prerequisites: EC 133-134.
Study of the determination of the prices of goods and production factors in a free market economy and the role of prices in the allocation of resources.

EC 342 International Economics.
Credit, 3 semester hours.

Prerequisites: EC 133-134.
The role, importance, and currents of international commerce; the balance of international payments; foreign exchange and international finance; international trade theory; problems of balance of payments adjustment; trade restrictions; international control of raw materials; economic development and foreign aid.

EC 345 Comparative Economic Systems.
Credit, 3 semester hours.

Prerequisites: EC 133-134.
A comparative study of the economic organization, resource allocation, and growth problems of the United States, British, and French economic systems and the economic systems of the U.S.S.R., Poland, and Yugoslavia.

EC 350 Economics of Labor Relations.
Credit, 3 semester hours.

Prerequisites: EC 133-134.
History of the union movement in the United States, union structure and government, problems of collective bargaining, economics of the labor market, wage theories, unemployment, governmental policy and control, and problems of security.

EC 410 Econometrics. Credit, 3 semester hours.

Prerequisite: EC 320.
The application of mathematical and statistical methods to both micro- and macro-economic policy issues.

EC 440 Economic Development. Credit, 3 semester hours.

Prerequisites: EC 133-134.
Economic problems of underdeveloped countries and the policies necessary to induce growth. Individual projects required.

EC 442 Economic Thought. Credit, 3 semester hours.

Prerequisites: EC 133-134.
The development of economic doctrine from mercantilism and Adam Smith to the thinking of modern day theorists. Emphasis upon the main currents of thought with the applicability to present-day problems. Individual study and reporting.

EC 445 Macroeconomic Analysis. Credit, 3 semester hours.

Prerequisites: EC 133-134, and A 111.
An investigation of the makeup of the national income and an analysis of the factors that enter into its determination; an examination of the roles of consumption, investment, government finance, and money influencing national income and output, employment, the price level, and rate of growth; policies for economic stability and growth.

EC 450 Thesis. Credit, 3 semester hours.

A written report on a research project. No class meetings, but periodic conferences with the thesis supervisor.

TEACHER EDUCATION Philip Olgin, Director

ED 225 The Adolescent Student. Credit, 3 semester hours

Prerequisite: P 111.
Study of the theory and principles of the development of the adolescent from puberty to maturity. The physical, intellectual, emotional, social, and moral growth and development of the adolescent.

ED 324 History and Philosophy of Education. Credit, 3 semester hours.

Prerequisite: HS 111, 112.
A critical study of philosophical ideas and conflicting philosophies of Education viewed from historical perspectives and compared with current practices. A major purpose of this course is to develop an objective approach to educational points of view accompanied by discriminating historical research. Implications for contemporary educational practice are reviewed.

ED 346 Directed Observation of the Secondary School. Credit, 3 semester hours.

3 periods weekly plus Laboratory to be arranged.
Structured as a Practicum. Directed visits to selected secondary schools. Laboratory field experiences include participation, tutoring, group meetings, and individual conferences. Emphasis on the principles and problems of the secondary schools as developed through group and individual laboratory experiences.

ED 370 Methods and Materials in Teaching the Major Fields in the Secondary Schools. Credit, 3 semester hours.

Prerequisite: P 111; ED 225.
Prerequisites or Corequisite: ED 324 and ED 346.
Assists the student in the development of objectives, learning activities, teaching procedures, organization and presentation of materials to be taught in the secondary schools, investigative techniques, and the understanding of new trends in the major field. This course is required for certification as a secondary school teacher in the State of Connecticut.

ED370M—Methods and Materials in Teaching Mathematics in the Secondary School (For Mathematics Education Majors only.)

ED370S—Methods and Materials in Teaching General Science in the Secondary Schools (For General Science Education Majors only.)

ED 447 Teaching in the Secondary School. Credit, 3 semester hours.

Prerequisite: ED 346.
General methods of teaching, problems confronting the inexperienced teacher such as discipline, lesson plans, teaching procedures and techniques, planning assignments, testing, grading, reporting to parents, and co-curricular activities; procedures are adapted to the major field of the student.

ED 465 The Teaching-Learning Process. Credit, 3 semester hours.

Prerequisite: P 111.
Psychological principles underlying teaching procedures in the classroom; application of psychological findings and methods to educational practice; learning, motivation, and individual differences as they apply to effective teaching.

ED 498-499 Directed Observation and Supervised Teaching in Secondary Schools. Credit, 6 semester hours.

Prerequsities: ED 324, ED 346, ED 370.
Prerequisite or Corequisite: ED 447, ED 465.
Field experience in selected secondary schools. Student teachers have the opportunity to observe secondary teachers in action and are guided to discuss their reactions with college supervisors and cooperating teachers. Prospective teachers assess problems in their major field and gain experience in effective management and instruction.

ELECTRICAL ENGINEERING

John D. Driscoll, Chairman

EE 223-224 Principles of Electrical Engineering I and II. Credit, 6 semester hours.

Prerequisites: M 118 and PH 209 concurrently.
Basic concepts in modern network theory and network techniques in analyzing simple and complex electric circuits. Definitions of current voltage relations, circuit elements, resistance, inductance, and capacitance. Circuit equilibrium equations, transformation, Kirchoff's laws, network theorems, passive and active networks, superposition. Thevenin and Norton's theorems, d-c transients, solution of simple electric circuits in the sinusoidal steady state by vector and complex algebra. Impedance, capacitance, and resonance concepts, single phase and three phase alternating currents and voltages, power relations. Magnetic fields and circuits, electromechanical energy conversion.

EE 253 Electrical Engineering Lab. I. Credit, 2 semester hours.

Prerequisite: EE 223 or permission of instructor.
Laboratory experiments involved with familiarization with measurement procedures, equipment, and components. Laboratory prepares student with techniques to be used in EE Labs II and III.
Note: Part-time students are charged for a standard 3 semester hour course.

EE 331-332 Network Analysis I and II. Credit, 6 semester hours.

Prerequisites: M 203 and EE 224.
A study and analysis of lumped linear electrical networks. Formulation of network integro-differential equations and their solution with emphasis on matrix notations. Introduction to the Laplace transform and its use in network analysis. Pole-zero analysis. Fourier series. Network topology and signalflow graphs. Polyphase circuits. Two port theory. Mutually coupled circuits. Transient and sinusoidal analysis. Tuned circuits. Adjustable circuits.

EE 336 Instrumentation Electronics w/Lab. Credit, 3 semester hours.

Prerequisites: EE 223 and M 118.
Cannot be taken for credit by electrical engineering students.
An introduction into instrumentation electronics aiming to provide a working knowledge and understanding of electronic instruments and controls as used in industrial processes. Starting with simple electrical measurements, the course subsequently deals with power supplies, transistor and vacuum tube amplifiers, and oscillators. Practical servo systems and operational amplifiers are treated, as well as simple circuits for electronic switching, and digital counting.

EE 341 Analog and Digital Computer Applications. Credit, 3 semester hours.

Prerequisites: EE 347, EE 331 and M 204.
The application of the analog and digital computers in the solution of engineering problems. The concept of an algorithm, numerical analysis, and programming.

EE 343 Electromechanical Energy Conversion. Credit, 3 semester hours.

Prerequisites: EE 361 and M 204.
Introduction to the principles used to explain the behavior of certain electromechanical devices; lumped parameter electromechanics; introduction to rotating machinery; equilibrium and stability of these devices; fields in moving matter; energy conversion dynamics.

EE 344 Electrical Machines. Credit, 3 semester hours.

Prerequisite: EE 343.
The fields, forces and torques in magnetic systems. Theory, characteristics and applications of direct current machines. Theory, performance and applications of transformers, AC generators, synchronous motors, single and polyphase induction motors.

EE 347-348 Electronic Devices and Circuits I and II. Credit, 6 semester hours.

Prerequisite: EE 331 concurrently.
Study of the fundamental principles and uses of electron devices in electronic circuits. Transistor circuits: Bias stability, models, and frequency response. Multi-stage circuits, feedback amplifiers. Amplifiers and RC coupled amplifiers. Power and audio amplifiers. Rectifiers. Field effect transistors. Integrated circuits.

EE 349 Electrical Engineering Lab. II. Credit, 2 semester hours.

Prerequisite: EE 348 concurrently.
Laboratory experiments and problems associated with electrical measurements, electronic devices, and electrical circuits.
Note: Part-time students are charged for a standard 3 semester hour course.

EE 351 Electrical Systems Analysis. Credit, 3 semester hours.

Prerequisites: EE 331 and M 204.
A study of the techniques for analyzing linear systems, dual systems, Fourier series and integral, convolution and superposition integral and their use in the solution of engineering problems. Feedback and sample data systems. Introduction to and use of signal flow graphs. Pole-zero analysis. Distributed networks. Stability criterion.

EE 352 Physical Electronics. Credit, 3 semester hours.

Prerequisite: EE 224.
Introduction to the physical processes involved in semi conductors. From energy band theory, carrier concentrations are inferred. Excess carriers and photo conductive devices, p-u junctions, diodes, fundamentals of lasers and physics of transistor operation, FET's.

EE 355-356 Switching and Logical Design I and II. Credit, 6 semester hours.

Prerequisites: IE 102; EE 356 permission of instructor.
Study of the fundamental concepts of digital systems. Boolean algebra and its use in logical design. Basic logic circuits. Map and tabular methods of minimization. Synchronous and asynchronous sequential circuits. Hazards, arithmetic operations, coding, storage elements, logical design techniques, threshold logic.

EE 361 Electromagnetic Theory. Credit, 3 semester hours.

Prerequisites: M 203 and EE 224.
Basic electromagnetic theory as related to the static fields of electric charges and the magnetic fields of steady electric currents. Fundamental field laws. Maxwell's equations, energy distributions, scalar and vector potentials, method of images, boundary relations, magnetization, polarization, time varying electric and magnetic fields, field plotting. Vector mathematics.

EE 420 Introduction to Statistical Communications. Credit, 3 semester hours.

Prerequisite: EE 351.
The elements of probability theory. Continuous random variables. Characteristic functions and central limit theorem. Stationary random processes and auto correlation. Power density spectrum of a random process. Application of probability theory to random processes.

EE 437 Industrial Power Systems Engineering. Credit, 3 semester hours.

Prerequisites: EE 331 and EE 332.
Study of the components forming a power system, its economic operation; symmetrical components and sequence impedances in the study of faults and load-flow studies.

EE 438 Electric Power Transmission. Credit, 3 semester hours.

Prerequisite: EE 437.
The fundamentals of electric generation, transmission, and distribution. Transmission line analysis and performance using circle diagrams. Load flow studies. Power system stability.

EE 445 Communications Theory. Credit, 3 semester hours.

Prerequisite: EE 351.
The analysis of communications circuits and the design of the components of communication systems. Signal analysis, transmission of signals, power density spectra, amplitude, frequency, and pulse modulation. Performance of communications system and signal to noise ratio.

EE 446-447 Pulse and Digital Circuits I and II. Credit, 6 semester hours.

Prerequisites: EE 331 and EE 347.
A study of circuits used for digital computers and pulse applications. Topics covered are: linear and non-linear wave-shaping, digital logic circuits, switching circuits (multivibrators), voltage comparators, negative resistance switching circuits, computer memories, voltage and current sweep circuits. Emphasis in the second half of the sequence is placed on current integrated technology with special projects.

EE 450-451 Analysis and Design of Active Networks I and II. Credit, 6 semester hours.

Prerequisites: EE 331, EE 348, and M 204.
A study of the techniques used in the analysis and design of active circuits, feedback oscillators, operational amplifiers, analog systems, power supplies and regulators, power circuits and systems, distortion analysis, silicon controlled rectifiers, high frequency transistor models, active filters and broadbanding techniques, and distributed networks, feedback analysis using root locus techniques. Gyrators and negative impedance converters.

EE 453 Electrical Engineering Lab. III. Credit, 2 semester hours.

Prerequisites: Senior Status in Electrical Engineering.
Laboratory experiments and problems associated with electrical machinery, microwaves, digital devices, electronic devices, and automatic controls.
Note: Part time students are charged for a standard 3 semester hour course.

EE 455 **Feedback Systems.**
Credit, 3 semester hours.
Prerequisite: EE 351.
Study of physical system using feedback to form a closed loop. Investigate stability from Root Locus, Routh, Bode, and Nyquist viewpoints. Performance and design, including feedback compensation, multiple inputs, and disturbances. Mathematical modeling of system elements and systems.

EE 462 **Microwave Fundamentals.**
Credit, 3 semester hours.
Prerequisite: EE 361.
The application and development of electromagnetic field theory to wave propagation, reflection in various media, and waveguides. Various modes of propagation in rectangular, circular, and coaxial waveguides. Dipole antenna element and radiation plots. Antenna arrays. Transmission line analysis and the use of Smith charts.

EE 500 **Senior Seminar.**
Credit, 3 semester hours.
Prerequisite: Instructor's consent.
Open to Seniors in Electrical Engineering.
Special topics in the field of electrical engineering. Arranged to suit the interest and requirements of the student, under the supervision of a staff member.

EE 504 **Laboratory Thesis.**
Credit, 3 semester hours.
Prerequisite: Instructor's consent.
Open to Seniors in Electrical Engineering.
Advanced laboratory testing and special problems. Students work on problems of their selection with the approval of the instructor. The work may be done in the form of a thesis or series of experiments.

ENGINEERING SCIENCE

Buddy Saleeby, Coordinator

ES 103 **Technology in Modern Society.**
Credit, 3 semester hours.
Scientific and technological developments and their implications for the future of society. Prospects and problems in communications, energy sources, automation, transportation, and other technologies. Use and control of technological resources for public benefit.

ES 107 **Introduction to Engineering.**
Credit, 3 semester hours.
Overview of the problems, perspectives, and methods of the engineering profession. Modeling of real world problems for purposes of optimization, decision making, and design. Practical techniques of problem formulation and analysis.

ENGLISH

Douglas Robillard, Chairman

Paul Marx, Director of Freshman English

EA **College Preparatory English.**
One semester. No credit.
A review of the fundamentals of English for students who do not meet the English requirements for admission to the University. Practice given in writing as well as in grammar.

EB **Reading Laboratory.**
One semester. No credit.
Helps the student to read faster with greater comprehension, to increase vocabulary, and to study more effectively. Supervised reading, training films, exercises, and discussions.

EF **English as a Second Language.**
One semester. No credit.
Designed for foreign-born students whose English is inadequate to do college-level work. Particular emphasis on individual pronunciation problems and use of American English idioms. Laboratory required.

E 113 **English Composition.**
Credit, 3 semester hours.
Prerequisite: Satisfactory performance on English Placement Examination or completion of EA College Preparatory English.
Theme writing with emphasis on thematic content, paragraphing, sentence construction, grammatical principles, and diction. Reading of essays to stimulate thought and illustrate rhetorical principles.

E 206 **Composition and Literature.**
Credit, 3 semester hours.
Prerequisite: E 113.
Further practice in theme writing. Reading of poetry, fiction, and drama in order to develop skill in analyzing and interpreting literature.

E 114 **Speech.**
Credit, 3 semester hours.
A disciplined approach to oral communication. Objectives are to develop proficiency in locating, organizing, and presenting material and to help the student gain confidence and fluency when speaking extemporaneously.

E 201-202 **World Literature I and II.**
Credit, 6 semester hours.
Prerequisite: E 113.
Selected translations of non-Western literature and of Western literature from Homer to the present. Emphasis upon literary, cultural, and philosophical values.

E 211-212 **Survey of English Literature I and II.**
Credit, 6 semester hours.
Prerequisites: E 113, E 206.
Readings in English Literature from its beginnings to the present, with attention to its historical and social backgrounds.

E 213 **Survey of American Literature I.**
Credit, 3 semester hours.
Intellectual and literary movements from Colonial times to the Civil War.

E 214 **Survey of American Literature II.**
Credit, 3 semester hours.
Intellectual and literary movements from the Civil War to the present.

E 217-218 **Survey of Black American Literature.**
Credit, 6 semester hours.
Black American poets, novelists, essayists, and dramatists from the Colonial Era to the present, including such writers as Frederick Douglass, W. E. B. DuBois, Countee Cullen, Richard Wright, James Baldwin, Leroi Jones, and Eldridge Cleaver.

E 220 **Report Writing.**
Credit, 3 semester hours.
Prerequisite: E 113.
Study of the standards inherent in effective reporting, both formal and informal, and of the principles of business letter writing, with practice in writing letters, memos, and reports. To be offered only in Fall semester.

E 260 **The Short Story.**
Credit, 3 semester hours.
A critical study of the best stories of American and British writers as well as stories, in translation, of writers of other nationalities and cultures, French, German, Russian, Latin American, African.

E 261 **The Essay.**
Credit, 3 semester hours.
A study of the essay and magazine article as characteristic art forms of our time. Readings from William Hazlitt to the present. The social and historic impact of selected great essays will be considered and the structure and art of contemporary essays will be discussed.

E 267-268 **Creative Writing.**
Credit, 6 semester hours.
Prerequisite: E 206 and Instructor's consent.
Practice in writing the short story, poetry, drama, or non-fiction; choice of genre based upon inclination and ability of the student. Analysis of published materials and student work.

E 301 **Literary Criticism and Scholarship.**
Credit, 3 semester hours.
Major critical theories, with readings from Plato and Aristotle to the present. Bibliographic tools and methods of research.

E 302 **History of the English Language.**
Credit, 3 semester hours.
The development and structure of English, including its Indo-European origins and the elements of Anglo-Saxon. Major emphasis on Middle English and the transition to Modern English. Some study of the distinctive coinage of American English.

E 323 **Sixteenth-Century Poetry and Prose.**
Credit, 3 semester hours.
The social and historical backgrounds of the English Renaissance; readings in the prose writers and in Wyatt, Surrey, Spenser, Sidney, and their contemporaries.

E 326 **English Drama to 1642.**
Credit, 3 semester hours.
The development of the English drama from its beginnings to the middle of the seventeenth century, excluding Shakespeare. Major emphasis upon the Elizabethan and Jacobean drama.

E 341-342 **Shakespeare.**
Credit, 6 semester hours.
E 341 is a prerequisite for E 342.
Introduction to representative comedies, histories, plays, tragedies, and poems.

E 353 **Literature of the Romantic Era.**
Credit, 3 semester hours.
Poetry and prose of the major Romantics—Wordsworth, Coleridge, Byron, Shelley, Keats, Lamb, and Hazlitt—with attention given to the milieu of the writers, the Continental background, and theories of Romanticism.

E 356 **Later Nineteenth-Century English Literature.**
Credit, 3 semester hours.
Poetry and prose from 1830-1900. The works of Tennyson, Browning, Arnold, Swinburne, Carlyle, Mill, Newman, Ruskin, and others studied in the light of the social, political, and religious problems of the period.

E 361 **Modern British Literature.**
Credit, 3 semester hours.
British fiction, drama, and poetry from 1900 to the present. Includes works of Conrad, Joyce, Lawrence, Woolf, Huxley, Forster, Shaw, Yeats, Auden, Spender, and Dylan Thomas.

E 362 **The Age of Donne and Milton.**
Credit, 3 semester hours.
Major writers of prose and poetry during the period 1600-1660: Donne, Milton, Burton, Bacon, Herbert, and others.

E 371 **Literature of the Neoclassic Era.**
Credit, 3 semester hours.
British writers of the period 1660-1760, with emphasis upon Dryden, Pope, Swift, Johnson, and others.

E 375 **The Age of Chaucer.**
Credit, 3 semester hours.
A detailed reading and critical study of Chaucer's Canterbury Tales, with some study of his predecessors and the medieval cultural milieu.

E 390 **The English Novel I.**
Credit, 3 semester hours.
The development of the novel in England from Defoe to Dickens and Thackeray.

E 391 **The English Novel II.**
Credit, 3 semester hours.
The development of the novel in England from George Eliot and Hardy to the present.

E 392 **Literature of the American Renaissance.**
Credit, 3 semester hours.
Intensive study of the writings of such figures as Emerson, Thoreau, Hawthorne, Melville, and Whitman, whose works are analyzed in the light of the influences and traditions which led to America's cultural independence.

E 402 **Modern Poetry.**
Credit, 3 semester hours.
A study of the works of representative twentieth-century British, American, and Continental poets.

E 405 **Modern Drama.**
Credit, 3 semester hours.
Principal movements in Continental, British, and American drama from Ibsen to the present.

E 406-409 **Continental Literature.**
Credit, 3 semester hours each course.
Selected poetry, drama, and fiction, in translation, of the European masters, primarily Russian, French, German, or Spanish. Topic to be announced for each semester.

E 411-412 **The Literature of Africa.**
Credit, 6 semester hours.
The chief writings, in English and in translation, of the prose writers, poets, and dramatists of the African nations.

E 478 **Contemporary American Literature.**
Credit, 3 semester hours.
Intensive study of developments in American fiction, poetry, and drama of our time. Readings in the works of such writers as Wolfe, Malamud, Bellow, Theodore Roethke, Robert Lowell, Arthur Miller, and Tennessee Williams.

E 481-498 **Studies in Literature.**
Credit, 3 semester hours each course.
Special topics in literature which may include concentration upon a single figure, a group of writers, or a literary theme. Several sections, each on a different topic, may run concurrently.

E 599 **Independent Study.**
Credit, 1-3 semester hours per semester with a maximum of 12.
Prerequisites: Consent of faculty member and chairman of department. Opportunity for the student under the direction of a faculty member to explore an area of interest to him. This course must be initiated by the student.

FIRE SCIENCE William Nyce, Coordinator

FS 301 **Essentials of Fire Chemistry w/Lab.**
Credit, 3 semester hours (same as CH 331).
Two lectures and one laboratory period a week.
Prerequisite: Junior classification.
The examination of the chemical requirements for combustion, the chemistry of fuels and explosive mixtures, and the study of the various methods of stopping combustion of fires. Analysis of the properties of materials affecting fire behavior. Detailed examination of the basic properties of fire.
Laboratory Fee: $18.00.

FS 302 Principles of Fire Science Technology w/Lab.
Credit, 3 semester hours.

Two lectures and one laboratory period a week.
Prerequisite: Junior classification.
Effect of fire on different types of construction, classes of occupancy hazard, levels of private and public protection, degrees of exterior exposure. Types of building construction, private water supplies, municipal water supplies, and combination systems. Methods of employee fire control.

Laboratory Fee: $18.00.

FS 303 Fire Protection Fluids and Systems w/Lab.
Credit, 3 semester hours (same as CH 332).

Two lectures and one laboratory period a week.
Prerequisite: FS 301.
Chemical properties of fluids used in fire suppression systems and operations. Design of water supply and distribution for fire protection. Laboratory study of operational and hydraulics problems.

Laboratory Fee: $18.00.

FS 304 Fire Detection and Control w/Lab.
Credit, 3 semester hours.

Two lectures and one laboratory period a week.
Prerequisite: FS 302.
Heat, sensitivity, thermostats, fusible elements, fire detection systems, design and layouts, alarm systems, power sources, safeguards, municipal alarm systems, construction, installation and maintenance requirements, standards and codes. Automatic extinguishing systems, design and layout of water, gas, and power systems.

Laboratory Fee: $18.00.

FS 401 Research Project.
Credit, 3 semester hours over two semester period.

One lecture per week—Junior Year.
One lecture and one laboratory session per week—Senior Year.
Development of a student project and a written report in a specified area in fire administration, or fire science technology with faculty supervision. Grade awarded upon completion of project. This is a two semester course.

Laboratory Fee: $18.00.

FS 402 Arson Investigation w/Lab.
Credit, 3 semester hours (same as CH 411).

Two lectures and one laboratory period a week.
Prerequisite: FS 303.
Methods used in starting fires and methods of detection of fires started by arsonists. Instrumental methods that may be used to assist in the investigation of fires started under suspicious circumstances.

Laboratory Fee: $18.00.

FS 403 Process and Transportation Hazards w/Lab.
Credit, 3 semester hours.

Two lectures and one laboratory period a week.
Prerequisite: FS 402.
Special hazards of industrial processing, manufacturing and the transportation of products and personnel. Analytical approach to hazard evaluation and control. Reduction of fire hazards in manufacturing processes.

Laboratory Fee: $18.00.

FS 404 Special Hazards Control w/Lab.
Credit, 3 semester hours.

Two lectures and one laboratory period a week.
Prerequisite: FS 304.
Types of industrial processes requiring special fire protection treatment such as heating equipment, flammable liquids, gases, and dusts. Emphasis on fundamental theories involved, inspection methods, determination of relative hazard, application of codes and standards, and economics of installed protection systems.

Laboratory Fee: $18.00.

FOREIGN LANGUAGES

Bruce A. French, Coordinator

FR 101-102 Elementary French.
Credit, 6 semester hours.

Stresses pronunciation, aural comprehension, and basic conversation; the fundamental principles of grammar; reading comprehension. Not open, except by special permission, to students who offer for college entrance more than one year of high school French.

FR 201-202 Intermediate French.
Credit, 6 semester hours.

Prerequisite French 101-102 or equivalent.
Conversation based on the reading of modern prose texts; drill in written and oral self-expression; a review of the principles of grammar.

FR 301-302 Main Currents of French Literature.
Credit, 6 semester hours.

Prerequisites: FR 201-202 or equivalent.
Writings representative of significant currents in French literature from the Middle Ages to the Twentieth Century. Opportunity to improve listening and speaking ability. Conducted in French. Laboratory optional, but recommended.

GR 101-102 Elementary German. Credit, 6 semester hours.

Stresses the fundamental principles of grammar; training in pronunciation, aural comprehension, and basic conversation. Some work in the language laboratory outside of class may be required. Not open, except by special permission, to students who offer for college entrance more than one year of high school German.

GR 201-202 Intermediate German. Credit, 6 semester hours.

For students with two years of high school German or one year of college German. Reading comprehension (some scientific texts), advanced study of grammar, composition, and oral self-expression.

IT 101-102 Elementary Italian. Credit, 6 semester hours.

Stresses pronunciation, aural comprehension, and basic conversation; instruction in the fundamental principles of grammar; training in reading comprehension. Not open, except by special permission, to students who offer for college entrance more than one year of high school Italian.

IT 201-202 Intermediate Italian. Credit, 6 semester hours.

Prerequisite: IT 101-102 or equivalent.
For students with two years of high school Italian or one year of college Italian. Conversation, advanced study of grammar and composition. Reading in classical and modern writers.

RU 101-102 Elementary Russian. Credit, 6 semester hours.

Fundamental principles of grammar; training in pronunciation, aural comprehension, and basic conversation. Some work in the language laboratory outside of class may be required. Not open, except by special permission, to students who offer for college entrance more than one year of high school Russian. Offered every other year.

RU 201-202 Intermediate Russian. Credit, 6 semester hours.

For students with two years of high school or one year of college Russian. A review and continuation of the principles of grammar, greater emphasis on reading comprehension, further drill in written and oral self-expression. Offered every other year.

SP 101-102 Elementary Spanish. Credit, 6 semester hours.

Stresses pronunciation, aural comprehension, and basic conversation; instruction in the fundamental principles of grammar; training in reading comprehension. Not open, except by special permission, to students who offer for college entrance more than one year of high school Spanish.

SP 201-202 Intermediate Spanish. Credit, 6 semester hours.

Prerequisite: SP 101-102 or equivalent.
For students with two years of high school Spanish or one year of college Spanish. Conversation, advanced study of grammar and composition. Works of prominent Spanish-American authors will be read.

SP 301-302 Main Currents of Spanish Literature. Credit, 6 semester hours.

Prerequisites: SP 201-202 or equivalent.
Writings representative of significant currents in Spanish literature from the Middle Ages to the Twentieth Century. Opportunity to improve speaking and listening ability. Conducted in Spanish. Laboratory optional, but recommended.

HISTORY Thomas Katsaros, Chairman

HS 111 Western Civilization I: to 1700. Credit, 3 semester hours.

Western Civilization from the ancient beginnings to mid-seventeenth century. The patterns of the social, cultural, and political aspects of ancient, medieval, and early modern eras that have shaped the Western tradition.

HS 112 Western Civilization II: from 1700 to present. Credit, 3 semester hours.

Prerequisite: HS 111.
European history from the Enlightenment to the present. Emphasis on economic and social changes, political history, the expansion of Europe and its international effects. Nationalism, imperialism, and socialism stressed.

HS 114 The Economic History of the Western World. Credit, 3 semester hours.

Prerequisite: HS 112.
From pre-industrial Europe to the present. Impact of the Industrial Revolution and World Wars on national policies, labor, business, international economics. The economic development of Western Europe in its relation to Soviet Russia and the United States.

HS 121 History of Science. Credit, 3 semester hours.

A survey of the history of science and technology from antiquity to the modern period. Particular attention is given to the social and historical process as an essential aspect of the development of scientific concepts.

HS 131 History of the Black Man in America.
Credit, 3 semester hours.
A comprehensive study of the Negro in the United States, including African antecedents and an account of slavery, Emancipation and its aftermath, and Negro contributions to the Modern Era.

HS 211 American History to 1865.
Credit, 3 semester hours.
The development of the American nation from colonial times to 1865. Significant economic, social, political, and institutional developments.

HS 212 American History from 1865.
Credit, 3 semester hours.
United States history from the Reconstruction through the contemporary era. Expanding industrialism, the changing concepts of the role of government, and the United States in world affairs.

HS 221 Comparative European Political Systems.
Credit, 3 semester hours.
Prerequisites: HS 111-112.
Historical, comparative approach to the political institutions of the United Kingdom, U.S.S.R., Federal Republic of Germany, and France. Emphasis on the relationship between Western and Eastern political systems.

HS 223 U. S. Diplomatic History.
Credit, 3 semester hours.
Prerequisites: HS 211 and HS 212.
The ideas, trends, and actions of U. S. Diplomacy from the American Revolution to the Spanish-American War; from the emergence of the United States as a world power to the foreign policy of the Nuclear Age.

HS 231 Modern Asia.
Credit, 3 semester hours.
The ideological and traditional socio-political-economic-diplomatic background of East, South, and Southeast Asia, the area's development since the impact of the West in the 16th century and the responses to this impact.

HS 308 Social and Intellectual History of the United States.
Credit, 3 semester hours.
Prerequisites: HS 211-212.
Leading ideas that have shaped important periods of American history. The colonial mind and spirit, the democratic upheaval, sectionalism—war—and reconstruction, the industrialization of the country, religion as it met the new age of science and economics, agrarian revolt, overseas possessions, the beginning of the end of isolation.

HS 310 The History of Modern England.
Credit, 3 semester hours.
Prerequisites: HS 111-112.
British institutions and industrial life from 1688 to the present. Traces the movement of British society from its eighteenth-century aristocratic base through the Liberal experiment of the nineteenth- to twentieth-century collectivism; England's role in international affairs.

HS 311 American Colonial and Revolutionary History to 1789.
Credit, 3 semester hours.
Prerequisites: HS 211-212.
The political, social and intellectual history of the British Colonies in North America leading to the American Revolution; the Revolutionary period and the creation of a republican society.

HS 312 The U. S. in the Twentieth Century.
Credit, 3 semester hours.
Prerequisites: HS 211-212.
Political history, social trends, and intellectual movements. Study of the expansion of the functions of government to meet modern complex problems arising from social and cultural trends and from the involvement of the United States in global politics.

HS 314 The History of Germany from 1648.
Credit, 3 semester hours.
Prerequisites: HS 111-112.
From the Treaty of Westphalia to the unification of Germany, the imperial era, the two World Wars, and the rise and fall of National Socialism to the problems of divided Germany today.

HS 315 The History of Europe in the Nineteenth Century.
Credit, 3 semester hours.
Prerequisites: HS 111-112.
The main political, economic, and intellectual trends in Europe in the period from 1815 to 1914. The effects of industrialism, liberalism, and socialism on European society and culture. In international affairs, the impact of nationalism on European power politics and the failure of the major powers to resolve their differences in the Balkans.

HS 317 Renaissance and Reformation.
Credit, 3 semester hours.
Prerequisites: HS 111-112.
Economic, political, intellectual, and religious developments in Continental Europe from 1300 to 1650; intellectual and social change during the transition from medieval to modern times; dynastic conflicts within the emerging state system.

HS 321 **The History of Ancient Greece and Rome.**
Credit, 3 semester hours.
Prerequisites: HS 111-112.
From the Homeric period to the year 500 A.D. Events, institutions, and ideas that have shaped the Western tradition. The political, social, economic, and cultural problems that caused the decline of these civilizations.

HS 325 **Europe in the Seventeenth and Eighteenth Centuries.**
Credit, 3 semester hours.
The cultural, political, and economic life of Europe from triumphant Classicism to the French Revolution. The Enlightenment: Prelude to Revolution and the Napoleonic Period.

HS 330 **History of Russia.**
Credit, 3 semester hours.
Prerequisites: HS 111-112.
From the thirteenth century, with particular emphasis on the transition from an agrarian to an industrial society in the period since the emancipation of the serfs in 1861. The role of the U.S.S.R. in world affairs since the Revolution of 1917; its impact upon Asia and the West.

HS 335 **Modern European Intellectual Thought.**
Credit, 3 semester hours.
A history of the intellectual, political, scientific and social thought from the Renaissance to modern times. Special emphasis will be placed on those ideologies that have shaped and influenced the modern world.

HS 351-358 **Selected Studies in History.**
Credit, 3 semester hours.
Special topics in History dealing with the modern world. A study in depth of vital historical issues.

HS 401 **Europe in the Twentieth Century.**
Credit, 3 semester hours.
The history of Western and Central Europe since World War I viewed from the perspective of Europe's rapidly changing role in world history. Europe's political, social, and economic adjustment to the Russian Revolution and Nazism, the emergence of America and Russia as superpowers, and the loss of overseas possessions.

HS 406 **Modern Japanese History.**
Credit, 3 semester hours.
The institutional and cultural traditions of Japan, the nature of Japan's feudal society after 1600, and the interplay of indigenous and foreign elements in the changes which affected thought, politics, and society. After the coming of Perry, the adoption and reflection of parliamentary government and the reforms that followed World War II.

HS 407 **Colonial and Early Latin America.**
Credit, 3 semester hours.
Prerequisites: HS 111-112, 211-212.
European and Indian origins, the formation of a colonial society and culture in the sixteenth and seventeenth centuries, the background and course of anti-colonial upheaval in the early nineteenth century, the problems from the post-independence period to 1890.

HS 408 **The History of Modern Latin America.**
Credit, 3 semester hours.
Prerequisites: HS 111-112, 211-212.
Latin America since 1890, including the distinctive histories of the major nations of Mexico, Brazil, Argentina, and Chile as well as the characteristics, problems, and prospects of the area as a whole. Inter-American relations and current revolutionary movements.

HS 409 **Modern Chinese History.**
Credit, 3 semester hours.
The traditional society as it existed prior to the Opium War, China's confrontation with the West and its effect on political, intellectual, and economic developments. The formation and evolution of the present Chinese regime.

HS 410 **A History of the Middle East.**
Credit, 3 semester hours.
The rise and spread of Islam and the development of an Arabic civilization. Primary attention on Turkey, Egypt, and Iran, the problems created by the Western impact on the peoples and governments of the area, the effect of the Zionist movement on Middle East politics.

HS 413 **A History of Africa in Modern Times.**
Credit, 3 semester hours.
Morocco, Algeria, Tunisia, and Libya, stressing the institutional histories of these countries, which enabled them ultimately to expel European imperialism. The second part of the course deals with nineteenth-century Africa, the partition of Sub-Sahara Africa by the European powers, the period of colonial domination, and the emergence of the independent states after 1945.

HS 415 **Historiography.**
Credit, 3 semester hours.
The development of schools of historical thought and interpretation from Thucydides to Toynbee.

HS 416 **Senior Seminar.**
Credit, 3 semester hours.
Required of all liberal arts students majoring in History, in the last semester of their senior year. The undertaking of an independent study and research project presented in an oral and written form.

HS 599 **Independent Study.**
Credit, 1-3 semester hours per semester with a maximum of 12.
Prerequisites: Consent of faculty member and chairman of department. Opportunity for the student under the direction of a faculty member to explore an area of interest to him. This course must be initiated by the student.

HOTEL AND RESTAURANT ADMINISTRATION

Howard Fidler, Chairman

HM 101 **Laws of Inn-Keeping.**
Credit, 3 semester hours.
Prerequisite: BA 101 or Instructor's permission.
Historical development of the common inn. The peculiarities of the inn-keeper-guest relationship are stressed. Responsibility of inn-keeper and use of inn-keeper's lien is emphasized.

HM 103 **Principles of Hotel Management.**
Credit, 3 semester hours.
Prerequisite: None.
Introduces the student to hotel and restaurant operations. History of the industry with special emphasis on current trends. Various operations within the industry are analyzed.

HM 150 **Management Decision Making.**
(Production Management).
Credit, 3 semester hours.
Prerequisite: Instructor's permission.
Presents the current methods and principles of food production as practiced by the food service industry. Quality control, portion and cost control, menu planning are emphasized.

HM 165 **Tourism.**
Credit, 3 semester hours.
Prerequisite: None.
Introduces to the student the numerous aspects of tourism as related to the hotel-motel industry. Foreign and domestic tourism and business travel are all reviewed.

HM 166 **Touristic Geography.**
Credit, 3 semester hours.
Prerequisite: HM 165.
A course examining the development of the touristic areas of every major travel destination. To what areas are travelers journeying and what developments are taking place on a world wide basis to attract an increasing number of tourists, whether individuals, pleasure groups or business conventions.

HM 201 **Front Office Administration.**
Credit, 3 semester hours.
Prerequisite: Instructor's permission.
To make the student aware of the work flow connected with front office procedures. The preparation of the Night Audit is stressed. The student is introduced to the Art of Inn-Keeping.

HM 302 **Purchasing and Control.**
Credit, 3 semester hours.
Prerequisite: Instructor's permission.
Introduction to the purchasing, receiving and issuing of food and beverages. The identification of grades and specifications determining quality of purchased items is emphasized. Cost control procedures are stressed.

HM 325 **Food and Beverage Control.**
Credit, 3 semester hours.
Prerequisite: None.
Current methods and principles of food and beverage storage, service, merchandising, issuing, as practiced by the hospitality industry. Phases covered on a rotating basis include menu planning, employee training, advertising and promotion, wine-cellar operation, music and entertainment, pre-cost procedures, payroll analysis.

HM 322 **Markets and Promotion of Public Services.**
Credit, 3 semester hours.
Prerequisite: BA 105.
Aspects of the services market with emphasis on consumer behavior. Internal and external stimulation of sales in competitive and non-competitive markets, and the vagaries of environmental concept. Experimental techniques embodied in industry sponsored sales-blitz activities.

HM 410 **Hotel Systems and Operations.**
Credit, 3 semester hours.
Prerequisite: Instructor's permission.
Analysis and evaluation of hotel systems and operations. Emphasis on analytical techniques, systems, computer-assisted operations, and change-induced problems.

HM 411 Equipment, Layout, and Design.
Credit, 3 semester hours.

Prerequisite: None.
The concept of building management is presented as demonstrating the interdependence of planning, construction, equipment, maintenance, personnel and on-premise customer. Develop layout studies, design equipment, estimate budget.

INDUSTRIAL ENGINEERING

Francis J. Costello, Chairman

IE 102 Introduction to Computers: FORTRAN.
Credit, 3 semester hours.

Prerequisite: M 109 or Equivalent.
An introductory course in computers and FORTRAN for the Engineering and science students. The concept of stored program computers is developed, and the student is taught the basics of the FORTRAN language. The role of problem analysis, program analysis, and programming techniques are presented. Several problems are programmed and debugged by the student and run on the campus computer facility.
Laboratory Fee: $3.00.

IE 103 Introduction to Computer Concepts.
Credit, 3 semester hours.

Prerequisite: None
Introduction to addressable memory and stored program concepts. Algorithms and flow charting of various problems. Binary/hexadecimal/decimal relationships included.

IE 104 Computer Systems Design.
Credit, 3 semester hours.

Prerequisite: IE 103.
Introduction to computer based systems design. Linking of subsystems that are mutually interrelated and interdependent. Development of data files and data banks.

IE 105 Introduction to Computers: COBOL.
Credit, 3 semester hours.

Prerequisite: M 109 or Equivalent.
An introductory course in the application of the computer to the needs of today's society for the business, social science, and art students. Student use of data processing facilities of the campus computer center, problem solving, logic theory, and the understanding of software packages are put into practice. Student learns how to develop flow charts and writes and debugs programs in COBOL.
Laboratory Fee: $3.00.

IE 106 Safety Organization and Management.
Credit, 3 semester hours.

Prerequisite: P 111.
History and development of safety movement, nature and extent of problem, development workmen's compensation, development of safety program, cost analysis techniques, locating and defining accident sources, analysis of the human element, employee training, medical service and facilities, and the what and how of the Occupational Safety and Health Act.

IE 119 Industrial Safety and Hygiene.
Credit, 3 semester hours.

Prerequisite: IE 214 or BA 125.
A basic course in industrial accident prevention and industrial hygiene, covering: managerial accident prevention functions and responsibilities; injury data development, usage, and validity; machine guarding techniques and guard development, including point-of-operation drives; personal protective equipment; fire prevention and control, including flammable solvents, dusts, and their characteristics; electrical hazards, hand tools, power and manual; employee training; communications; hazard analysis; accident investigation. Industrial hygiene problems caused by solvents, dusts, noise, radiation are studied, as well as regulatory bodies, laws, and catastrophe hazards.

IE 201 Accident Conditions and Controls.
Credit, 3 semester hours.

Prerequisite: IE 106.
Mechanical hazards, machine and equipment guarding, boilers and pressure vessels, structural hazards, materials handling hazards and equipment use, electrical hazards, personal protective equipment.

IE 204 Engineering Economics.
Credit, 3 semester hours.

Prerequisite: M 116 or M 117.
A quantitative analysis of applied economics in engineering practice; the economy study for comparing alternatives; interest formulae; quantitative methods of comparing alternatives; intangible considerations; selection and replacement economy for machines and structures; break-even and minimum cost points; depreciation; relationship of accounting to the economy study; review of current industrial practices. Promotes logical decisions through the consideration of alternative courses of action.

IE 214 Management Theory.
Credit, 3 semester hours.

Prerequisite: Junior or Senior Status.
Provides insight into the elements of the managerial process and develops a rational synthesis of the mass of detail comprising the subject matter of management. Focusing largely upon the complex problems of top and middle-level management, this course investigates what managers do under given circumstances, yet stresses the on-going activities of management as part of an integrated, continuous process.

IE 216 Elements of Industrial Hygiene.
Credit, 3 semester hours.

Prerequisites: IE 106, PH 103-104, CH 103.
Analysis of toxic substances and their effect on the human body, analysis and effect of chemical hazards, physical hazards of electromagnetic and ionizing radiation, abnormal temperature and pressure, noise, ultrasonic and low frequency vibration: sampling techniques including detector tubes, particulate sampling, noise measurement, and radiation detection: Governmental and Industrial Hygiene Standard Codes.

Laboratory Fee: $5.00.

IE 217 Industrial Safety Auxiliary Functions.
Credit, 3 semester hours.

Prerequisites: IE 106, IE 201.
Fire prevention and control, building design and construction; pollution problems, waste disposal and pollution control; emergency and disaster control, communications and security, traffic safety engineering.

IE 223 Personnel Administration.
Credit, 3 semester hours.

Prerequisite: IE 214 or BA 125.
Provides a foundation in fundamental concepts and a general knowledge of techniques in the administration of personnel relations. The nature of personnel administration, the handling of personnel problems, employee attitudes and morale. Techniques of personnel administration: recruitment, interviews, placement, training, employee rating, as well as wage policies and administration. In order to secure breadth and depth in the approach to personnel problems, simple case studies are used at appropriate points throughout the course.

IE 224 Advanced FORTRAN Programming.
Credit, 3 semester hours.

Prerequisites: IE 102 and M 115.
Introduces the student to advanced FORTRAN programming and encourages student utility of the campus computer facility and its peripheral devices. Various typical engineering and scientific computer applications are discussed and demonstrated. Problem solving innovations are presented. The last few weeks are devoted to an introduction of the business language, COBOL.

Laboratory Fee: $8.00.

IE 225 Advanced COBOL Programming and Introductory FORTRAN
Credit, 3 semester hours.

Prerequisite: IE 105.
Introduces the student to advanced techniques in programming and debugging programs written in COBOL for the campus computer. Various typical systems, analyses, and applications are discussed and demonstrated. The last few weeks are devoted to an introduction of writing and debugging problems written in the scientific language, FORTRAN.

Laboratory Fee: $8.00.

IE 226 Numerical Analysis I.
Credit, 3 semester hours.

Prerequisite: M 118.
Basic theories and techniques of numerical analysis, including relevant differential and integral calculus topics. Solution of equation sets, numerical approaches to integration and differentiation, and introduction to optimization theory.

IE 227 Numerical Analysis II.
Credit, 3 semester hours.

Prerequisite: IE 226.
Introduction to linear algebra and engineering applications. Euclidean space and matrix methods, with emphasis on problem formulation and solution. Special topics include Eigen vectors, linear functions, and quadratic forms.

IE 228 Introduction to FORTRAN IV.
Credit, 3 semester hours.

Prerequisite: IE 104.
Introduction to FORTRAN IV, a scientific/engineering-oriented high-level computer language. Application to problems of a technical nature.

Laboratory Fee: $3.00.

IE 229 Advanced FORTRAN IV.
Credit, 3 semester hours.

Prerequisites: IE 226, IE 228.
Emphasis on advanced techniques in FORTRAN IV including specification statements, subscripted variables and subprograms. Peripheral devices are introduced.

Laboratory Fee: $3.00.

IE 230 Introduction to COBOL.
Credit, 3 semester hours.

Prerequisites: IE 103, IE 104.
Introduction to ANS COBOL, a business-oriented high-level computer language. Application to problems of a business nature.

Laboratory Fee: $3.00.

IE 233 Cost Control.
Credit, 3 semester hours.

Prerequisite: M 115.
Basic analysis of cost control techniques. Designed to give members of the management team the underlying rudiments of cost control systems they will be using and by which they will be measured and controlled. Theory of standard costs, flexible budgeting, and overhead handling techniques emphasized by analytical problem solution.

IE 234 Production Control.
Credit, 3 semester hours.

Prerequisites: IE 214 or BA 125; and M 115.
The basic principles that govern production control in an industrial plant. These principles are worked out in the problems of procuring and controlling materials, in planning, routing, scheduling, and dispatching. Familiarizes the student with present and new methods used in this field, including O. R. techniques.

IE 243 Work Analysis.
Credit, 3 semester hours.

Prerequisite: M 115.
An introductory course in Motion Analysis, Methods Analysis, and Work Measurement. Motion and Methods Analysis techniques include the Principles of Motion Economy, Process Analysis charting, Operations Analysis, Activity Analysis, and Work Design Layout Analysis. Students are required to design a work place project which will be filmed on CCTV for analysis.
Work measurement includes an introduction to Time Study fundamentals and Pre-Determined Time Systems.

Laboratory Fee: $8.00.

IE 330 Industrial Automation.
Credit, 3 semester hours.

Prerequisites: IE 102, EE 224 or EE 336, ME 204.
Develops the fundamental principles of automation, what automation is, and how it is implemented in typical mechanical and processing industries. Topics covered include single loop design, high traffic design, and competitive level design techniques. Tools for automation include: computers, feedback control, simulation, and digital and analog logic.

IE 331 Advanced COBOL.
Credit, 3 semester hours.

Prerequisite: IE 230.
Emphasis on advanced techniques in ANS COBOL including table usage and peripheral memory devices such as disks, etc.

Laboratory Fee: $3.00.

IE 332 PL/1 and RPG.
Credit, 3 semester hours.

Prerequisites: IE 228, IE 230.
Development of the use of PL/1 a combination business-oriented and scientific/engineering-oriented high-level computer language; and RPG, a report generating special language useful to the generation of multi-styled reports.

Laboratory Fee: $3.00.

IE 334 Assembler Language.
Credit, 3 semester hours.

Prerequsites: IE 228, IE 230.
Description of the functional characteristics of a computer main storage and peripheral unit structure along with the monitoring system control function via the use of the Assembler Language.

Laboratory Fee: $3.00.

IE 335 Simulations and Applications.
Credit, 3 semester hours.

Prerequisites: IE 229, IE 331, IE 227, IE 347, IE 346, IE 502.
Evaluation of mathematical modeling of a system (business or scientific/engineering-oriented) geared towards program simulation. Canned simulation programs (e.g.; Business Games, GASP, GPSS) will be evaluated and run.

Laboratory Fee: $3.00.

IE 336 Hardware Operation.
Credit, 3 semester hours.

Prerequisite: IE 335.
Hands on computer operation of programs written by the student. Use of all I/O devices will be included along with description of disk monitoring system control.

Laboratory Fee: $3.00.

IE 344 Advanced Work Analysis.
Credit, 3 semester hours.

Prerequisite: IE 243.
A course extending the principles introduced in the prerequisite course including the development of Standard Data Systems, formula construction in standard data, Methods-Time-Measurement and Master Standard Data predetermined time systems, Work Sampling, Standards on Indirect Work, Wage Payment Plans, and the use of Closed Circuit TV as a Methods training tool.

Laboratory Fee: $8.00.

IE 346 Statistical Analysis.
Credit, 3 semester hours.

Prerequisite: M 203.
Provides an introduction to the application of statistical techniques to industrial and engineering problems, probability and distribution theory, measures of central tendency and dispersion in relation to population and samples, as well as applications of algebraic methods in industrial practice, including advanced statistical methods.

IE 347 Probability Analysis.
Credit, 3 semester hours.

Prerequisite: BA 216 or IE 346.
Develops the theory of probability and related applications. Introduces such relevant areas as: combinations and permutations, probability space, laws of large numbers, random variables, conditional probability, Bayes' Theory, Markov chains, and stochastic processes.

IE 402 Numerical Controls and Methods.
Credit, 3 semester hours.

Prerequisites: IE 102, ME 124, M 204.
Involves the development and evaluation of methods for computing required numerical results from given numerical data specifically oriented toward numerical controlled machines.

IE 436 Quality Control.
Credit, 3 semester hours.

Prerequisite: IE 346.
Economics of quality control; modern methods used by industry to achieve quality of product; preventing defects; organizing for quality; locating chronic sources of trouble; coordinating specifications, manufacturing, and inspection; measuring process capability, using inspection data to regulate manufacturing processes; control charts; selection of modern sampling plans.

IE 443 Facilities Planning.
Credit, 3 semester hours.

Prerequisites: IE 243, IE 204.
Factors in plant location, design, and layout of equipment. The basic principles of obtaining information essential for carrying out such investigations. Survey of such practices as material handling, storage and storeroom maintenance, and use of service departments in modern factories.

Laboratory Fee: $8.00.

IE 502 Operations Research.
Credit, 3 semester hours.

Prerequisite: BA 216 or IE 346.
The Operations Research area is oriented to various mathematical and near-mathematical methods for getting answers to certain kinds of business problems. Simulation including Monte Carlo, queuing, the Flood method for assigning jobs, the transportation method, and linear programming including the simplex method with both algebraic solution and tableaus.

IE 504 Laboratory—Thesis.
Credit, 3 or 4 semester hours.

Prerequisite: Senior I.E. status.
Advanced laboratory testing and special problems. The student works on problems of his own selection which have been outlined by him and have received approval. They may be in the form of a semester thesis or a series of original experiments.

IE 507 Systems Analysis (General).
Credit, 3 semester hours.

Prerequisite: Junior status required.
Presents the analytical and conceptual techniques upon which systems analysis and development is based, and applications to nonbusiness as well as business operations. Development of case studies and their applications independently oriented to the student's major area of interest.

IE 508 Systems Analysis (Business and Engineering).
Credit, 3 semester hours.

Prerequisites: IE 214 or BA 125, and M 115.
Presents the analytical and conceptual techniques upon which systems analysis and development is based, and applications to business and industrial fields. Development of case studies and their applications independently oriented to the student's major area of interest.

IE 510 Business Games:
Credit, 3 semester hours.

Prerequisites: IE 214 or BA 125; and BA 216 or IE 346.
The Business Games area gives the student the opportunity of correlating his entire course of study in a management simulation framework. These training games make use of simulation models that explore specific management areas in depth. Operations research techniques of scientific management are developed. The purposes of these games are as follows: (1) to serve as a framework for training sessions in basic management principles; (2) to serve as an introduction to the problem of manufacturing management; (3) to serve as a focal point for management development discussion of long-range planning and decision assisting tools; (4) to show the student the use of modern electronic computer methods.

JOURNALISM Sydney J. Goluboff, Coordinator

J 101 Journalism I.
Credit, 3 semester hours.

A survey of journalism designed to acquaint students with the profession. The American newspaper as a social institution and a medium of communication. The reporting of public affairs and elementary editing.

J 102 Journalism II.
Credit, 3 semester hours.

Prerequisite: J 101.
The basic principles of journalism and the organizational patterns of the mass media. The gathering of journalistic stories and the writing of general, simple, complex, and feature stories.

J 201 News Writing and Reporting.
Credit, 3 semester hours.

Prerequisites: J 101, E 113.
The elements of news, the style and the structure of news stories, news gathering methods, copyreading, and editing. Practical experience in reporting, writing, and editing.

J 301 Advanced Journalism and Feature Writing.
Credit, 3 semester hours.

Prerequisite: J 201.
Theory of copyreading, editing, feature writing, headline writing, and reporting. Practical problems.

MATHEMATICS Bruce W. Tyndall, Chairman

All prerequisites for the following mathematics courses must be strictly observed unless waived by permission of the Mathematics Department.

M 001 Mathematics Review I.
No credit. Meets 3 hours per week.

Required of both day and evening students who do not show sufficient understanding of mathematics fundamentals, as determined by entrance examinations. Natural numbers, integers, rationals and irrationals, properties and operations in each, construction and solution of mathematical models using simple equations, and percentages.

M 105 Introductory College Mathematics.
Credit, 3 semester hours.

Introductory college mathematics for the liberal arts student that includes a variety of mathematical ideas chosen to illustrate the nature and importance of mathematics in human culture. An inductive approach based on experimentation and discovery.

M 109 Elementary College Algebra.
Credit, 3 semester hours.

A review of the fundamental operations and an extensive study of functions, exponents, radicals, linear, and quadratic equations. Additional topics include ratio, proportion, variation, progressions, and the binomial theorem.

M 115 Mathematical Analysis I.
Credit, 3 semester hours.

Prerequisite: M 109.
Designed to offer the foundation needed for the study of calculus. Polynomials, algebraic functions, elementary point geometry, plane analytic trigonometry, and properties of exponential functions.

M 116 Mathematical Analysis II.
Credit, 3 semester hours.

Prerequisite: M 115.
An intuitive approach to topics in functions, analytic geometry, differential and integral calculus, and probability. Designed for an insight into, and appreciation of, the methods of analysis.

M 115/117 Calculus I.
Credit, 6 semester hours.

Prerequisite: M 109.
A one-semester course meeting six hours per week, which includes topics from M 115 and M 117.

M 117 Calculus I.
Credit, 3 semester hours. 4 ☺

Prerequisite: M 115.
The first-year college course for majors in mathematics, science, and engineering; and the basic prerequisite for all advanced mathematics. Introduces differential and integral calculus of functions of one variable, along with plane analytic geometry.

M 118 Calculus II.
Credit, 4 semester hours.

Prerequisite: M 117.
Continuation of first-year calculus, including methods of integration, the fundamental integration theorem, differentiation and integration of transcendental functions, and varied applications.

M 121 Algebraic Structures I.
Credit, 3 semester hours.

A first course in and an orientation to abstract mathematics: elementary logic, sets, mappings, relations, operations, elementary group theory. Open to all freshmen and sophomores

M 122 Algebraic Structures II.
Credit, 3 semester hours.

Prerequisite: M 121.
A continuation of M 121 including an introduction to groups, rings, fields, and the real and complex number systems.

M 127 Finite Mathematics.
Credit, 3 semester hours.

Basic discrete functions with numerous applications in the social sciences, elementary finite differences; topics from probability, matrices, and introduction to linear programming.

M 128 Elementary Statistics.
Credit, 3 semester hours.

Prerequisites: one previous course in college mathematics.
Includes basic probability theory, random variables and their distributions, estimation and hypothesis testing, regression and correlation. Will emphasize an applied approach to statistical theory with applications chosen from many different fields of study.

M 137 Calculus Topics.
Credit, 4 semester hours.

Prerequisite: Departmental permission.
The theoretical material of the standard first year of calculus, including limits, chain rules, mean value theorems, and a discussion of the fundamental theorem of integral calculus. Upon successful completion, the student is qualified for M 203.

M 203 Calculus III.
Credit, 4 semester hours.

Prerequisite: M 118.
The calculus of multiple variables, covering third dimensional topics in analytics, linear algebra, and vector analysis, plus partial differentiation, multiple integration, infinite series, and indeterminate forms.

M 204 Differential Equations.
Credit, 4 semester hours. 3 Cr

Prerequisite: M 203.
The solution of ordinary differential equations, including the use of Laplace transforms. Existence of solutions, series solutions, matrix methods, non-linear equations, and varied applications.
[as of Fall '75 this will change to 3 cr]

M 231 Linear Algebra.
Credit, 3 semester hours.

Prerequisite: M 203.
Linear spaces and systems, matrices, linear transformations, quadratic forms, eigenspaces, and other topics.

M 301 Linear Analysis.
Credit, 3 semester hours.

Prerequisites: M 204 and M 231.
Linear vector spaces, infinite series, transformations, generalized Fourier series, solutions of partial differential equations.

M 303 Advanced Calculus I.
Credit, 3 semester hours. (EE Emphasis)

Prerequisite: M 204.
A survey course in applied mathematics. Vector Calculus: line and surface integrals, integral theorems of Green and Stokes, and the divergence theorem. Complex variables: elementary functions, Cauchy-Riemann equations, integration, Cauchy integral theorem, infinite series, calculus of residues, and conformal mapping. An introduction to Cartesian tensors.

M 304 Advanced Calculus II.
Credit, 3 semester hours. (ME Emphasis)

Prerequisite: M 204.
Topics from applied mathematics include: Fourier series, orthogonal functions, Bessel functions, Legendre polynomials, Laplace and Fourier transforms, product solutions of partial differential equations, and boundary value problems.

M 305 Series Solutions.
Credit, 3 semester hours.

Prerequisite: M 204.
Series solutions of ordinary differential equations, including the hypergeometric type, Fourier analysis, introduction to perturbation methods, and successive approximation solutions of non-linear differential equations.

M 309 Advanced Differential Equations.
Credit, 3 semester hours.

Prerequisite: M 204.
Theoretical analysis and applications of nonlinear differential equations. Phase plane and space, perturbation theory and techniques, series and related methods, stability theory and techniques, and relaxation phenomena.

M 321 Modern Algebra I.
Credit, 3 semester hours.

Prerequlsites: M 121 and M 231.
Groups, rings, integral domains, fields, polynomials.

M 325 Number Theory.
Credit, 3 semester hours.

Prerequisite: M 121.
Topics are selected from the following: mathematical induction, Euclidean algorithm, integers, number theoretic functions, Euler-Fermat theorems, congruence, quadratic residues, and Peano axioms.

M 338-339 Numerical Analysis I and II.
Credit, 6 semester hours.

Prerequisite: M 204 and IE 102.
Approximation and error evaluation. Finite differences approximation by polynomial and orthogonal series, solutions of ordinary differential equations, solutions of elliptic, parabolic, and hyperbolic partial differential equations, interpolation, and basic integral equation solutions.

M 341 Sets and Ordered Structures.
Credit, 3 semester hours.

Prerequisite: M 121.
Axiomatic set theory based on the Zermelo-Fraenkel theory, algebra of sets, relations and functions, finite and infinite sets, order, axiom of choice and its equivalents.

M 343 Projective Geometry.
Credit, 3 semester hours.

Prerequisites: M 121 and M 231.
Projective transformations, fixed points, invariants, cross-ratio, conics, Euclidean and non-Euclidean geometries.

M 345 Tensor Analysis.
Credit, 3 semester hours.

Prerequisites: M 204 and M 231.
The properties of vectors and tensors in Cartesian and in general curvilinear coordinate systems. Topics covered include: invariance properties, transformation laws, calculus of tensors, covariant differentiation, surface theory. Applications are considered in areas such as rigid body dynamics, elasticity, fluid mechanics, electricity and magnetism, and geometry.

M 371 **Probability Theory.**
Credit, 3 semester hours.
Prerequisite: M 203.
Axiomatic study of probability: sample spaces, combinatorial analysis, independence and dependence, random variables, distribution functions, moment generating functions, central limit theorem.

M 381 **Real Analysis I.**
Credit, 3 semester hours.
Prerequisites: M 121 and M 203.
Foundations of analysis: sets and functions, real and complex number systems; limits, convergence and continuity, sequences and infinite series, differentiation.

M 412 **Real Analysis II.**
Credit, 3 semester hours.
Prerequisite: M 381.
Continuation of M 381 including Riemann-Stieltjes integration theory and an introduction to measure theory and the Lebesgue integral.

M 422 **Modern Algebra II.**
Credit, 3 semester hours.
Prerequisite: M 321.
Continuation of M 321 including topics such as: vector spaces, modules, commutative ring theory, Galois theory.

M 423 **Complex Variables.**
Credit, 3 semester hours.
Prerequisite: M 381.
For mathematics, science, and engineering students.
Review of elementary functions and Euler forms; plus holomorphic functions, Laurent series, singularities, calculus of residues, contour integration, maximum modulus theorem, bilinear and inverse transformations, conformal mapping, and analytic continuation.

M 441 **Topology.**
Credit, 3 semester hours.
Prerequisite: M 381.
Topics selected from the following: Hausdorff neighborhood relations, derived, open and closed sets, closure, topological space, bases, homeomorphisms, relative topology, product spaces, separation axioms, metric spaces, connectedness and compactness.

M 472 **Mathematical Statistics.**
Credit, 3 semester hours.
Prerequisite: M 371.
Elements of the theory of point estimation, maximum likelihood estimates, theory of testing hypotheses, power of a test, confidence, intervals, linear regression, experimental design and analysis of variance, correlation, and non-parametric tests.

M 491 **Departmental Seminar.**
Credit, 3 semester hours.
Independent study of some topic or topics approved by the Chairman of the department. This work is done under the supervision of a faculty member. A paper and/or a seminar talk may be required.

MECHANICAL ENGINEERING

Harry H. Steinhauser, Jr., Chairman

ME 101 **Engineering Graphics.**
Credit, 3 semester hours.
An introduction to the principles and techniques of graphical communication. Fundamentals of orthographic projections; sections; applied geometry; auxiliary views; analysis of point, line, and plane relationships; detail and assembly drawing of simple machine parts.

ME 102 **Engineering Drawing and Design.**
Credit, 3 semester hours.
Prerequisite: ME 101.
For technical students and draftsmen, covering layout of assembly drawings; detailing of their parts, properly dimensioned, for interchangeable manufacture; use of A S A tables of metal fits for machine parts; use of threads and fasteners with the use of tolerances and limits.

ME 124 **Mechanical Processes.**
Credit, 3 semester hours.
Mill and manufacturing processes. The casting of metals, pattern making, and mold preparing. Fabricating, metal cutting, and welding. Demonstrations, laboratory, and inspection trips to local manufacturing plants.

ME 204 **Dynamics.**
Credit, 3 semester hours.
Prerequisites: CE 201, and M 118 or M 137 (M 118 or M 137 may be taken concurrently).
Kinematics and dynamics of particles and rigid bodies with emphasis on two-dimensional problems. Vector representation of motion in rectangular, polar, and natural coordinates. Impulse-momentum and work-energy theorems. Rigid bodies in translation, rotation and general plane motion.

ME 301 Thermodynamics I.
Credit, 3 semester hours.

Prerequisites: M 118 or M 137.
Classical thermodynamics treatment of first and second laws. Thermal and caloric equations of state. Closed and open systems, and steady flow processes. Absolute temperature, entropy, combined first and second laws. Introduction to statistical thermodynamics: particle distributions, statistical concept of entropy, and relation to macroscopic properties.

ME 302 Thermodynamics II.
Credit, 3 semester hours.

Prerequisites: ME 301, and M 203 or ME 303 (M 203 or ME 303 may be taken concurrently).
Extensions and applications of first and second laws: availability, combustion processes, phase and chemical equilibrium, ideal gas mixtures. Maxwell's relations. Steam power and refrigeration cycles. Internal combustion engine and gas turbine cycles. Irreversible thermodynamics.

ME 303 Principles of Engineering Analysis.
Credit, 3 semester hours.

Prerequisites: M 118 or M 137, and ME 204 (ME 204 may be taken concurrently).
The formulation and solution of problems arising in the following areas: dynamics, fluid mechanics, heat transfer, structural mechanics, mechanical vibrations, and electrical circuits.

ME 311 Machine Elements.
Credit, 3 semester hours.

Prerequisite: CE 202.
Analysis and design of machine elements to meet specified operating conditions. Stresses, deformations, and other factors in design of machine parts. Application to machine elements such as joints, shafts, gears, couplings, brakes, clutches, and flexible power-transmitting elements.

ME 312 Mechanical Design.
Credit, 3 semester hours.

Prerequisite: CE 307 or instructor's consent.
Continuation of Machine Elements. Design projects selected individually developed by the student.

ME 315 Mechanical Engineering Laboratory No. 1.
Credit, 2 semester hours.

Prerequisites: CE 202, ME 204, and ME 303 (ME 303 may be taken concurrently).
Students conduct selected tests in the fields of mechanics of materials and vibrations. Emphasis placed on organization of the experiment, measurement techniques, sources of error, and organization of the report. Students are required to design, conduct, and present one experiment of their own.
Note: Part-time students are charged for a standard 3 semester hour course.

ME 321 Fluid Mechanics.
Credit, 3 semester hours.

Prerequisites: ME 204, and M 203 or ME 303.
Fluid kinematics: continuity equation, vector operations. Momentum equation for frictionless flow: Bernoulli equation with applications. Irrotational flow: velocity potential, Laplace's equation, dynamic pressure and lift. Stream function for incompressible flows. Rotational flows: vorticity, circulation, lift, and drag. Integral momentum analysis. Navier Stokes equation: stress tensor, Newtonian fluid. Boundary layer approximations.

ME 322 Introduction to Gas Dynamics.
Credit, 3 semester hours.

Prerequisites: ME 302 and ME 321 (ME 321 may be taken concurrently).
Compressible fluid flow with emphasis on one-dimensional ducted steady flows with heat transfer, frictional effects, shock waves, and combined effects. Introductory considerations of two and three dimensional flows. Occasional demonstrations will accompany the lectures.

ME 335 Tool Design
Credit, 3 semester hours.

Prerequisites: CE 201 and ME 124 (ME 124 may be taken concurrently).
Basic techniques of tool design, methods, analysis, drill jig design, tolerances and allowances, cutting tools, die design, gauges, and fixtures.

ME 336 Tool Engineering.
Credit, 3 semester hours.

Prerequisite: ME 335 or Instructor's Consent.
A continuation of ME 335 with emphasis on economics, estimating, and process planning. Students design projects requiring the complete planning and designing necessary to manufacture machine parts.

ME 343 Mechanisms.
Credit, 3 semester hours.

Prerequisite: ME 204.
Graphical and analytical methods for determining displacements, velocities, and accelerations of machine components. Application to simple mechanisms such as linkages, cams, gears.

ME 344 Mechanics of Vibration.
Credit, 3 semester hours.

Prerequisites: ME 204 and ME 303.
The mathematical relationships necessary for the solution of problems involving the vibration of lumped and continuous systems; damping; free and forced motion; resonance; isolation; energy methods; balancing; single, two and multiple degrees of freedom; vibration measurement.

ME 401 Mechanical Systems Analysis.
Credit, 3 semester hours.

Prerequisite: ME 303.
Dynamical systems and their characteristics. Analogy of electrical, mechanical, and other systems. Mixed systems—Dimensional Analysis—Design considerations.

ME 403 Introduction to Flight Propulsion.
Credit, 3 semester hours.

Prerequisites: ME 322 and Instructor's consent.
A senior course designed for those students who intend to work or pursue further studies in the aerospace field. Among the topics covered are: Detonation and deflagration, introductory one-dimensional non-steady gas flows, basic concepts of turbo-machinery, and survey of the contemporary propulsive devices. Shock tubes, supersonic wind tunnel, and flame propagation demonstrations will accompany the lectures.

ME 404 Heat and Mass Transfer.
Credit, 3 semester hours.

Prerequisites: ME 302, ME 321, and some knowledge of differential equations (ME 321 may be taken concurrently).
Conduction in solids, solution of multi-dimensional conduction problems, unsteady conduction, radiation, boundary layer, and convection. Introduction to mass transfer. The lectures will include occasional demonstrations of convection, radiation, heat exchangers.

ME 405 Advanced Mechanical Design.
Credit, 3 semester hours.

Prerequisite: ME 321.
Selected and advanced topics related to the design of machine elements such as hydrodynamic theory of lubrication and principles of hydraulic machines with application to hydraulic couplings.

ME 408 Advanced Dynamics.
Credit, 3 semester hours.

Prerequisites: ME 204, ME 303, and M 204.
Plane and spatial motion of particles and rigid bodies, inertia tensor, relative motion, gyroscopes, central force motion, Lagrangian and Hamiltonian Methods.

ME 415 Mechanical Engineering Laboratory No. 2.
Credit, 2 semester hours.

Prerequisites: ME 302, ME 321, and ME 404.
A survey of experiments and laboratory investigations covering the areas of fluid mechanics, thermodynamics, heat transfer, and gas dynamics.
Note: Part-time students are charged for a standard 3-semester-hour course.

ME 512 Senior Seminar.
Credit, 3 semester hours.

Open to Seniors with Chairman's approval.
An independent design, theoretical analysis, or laboratory investigation as chosen by the student and approved by the Chairman of the department. The work is performed by the student with frequent critiques by the responsible faculty member.

MATERIALS ENGINEERING

Richard J. Greet, Coordinator

MT 200 Engineering Materials. SPRING TERM
Credit, 3 semester hours.

A study of the properties of the principal engineering materials of modern technology: Steels and non-ferrous alloys and their heat treatment, concrete, wood, ceramics, and plastics. Gives engineers sufficient background to aid them in selecting materials and setting specifications.

MT 219 Principles of Solids I FALL TERM
Credit, 3 semester hours.

Prerequisite: CH 105.
Introduction to the relationships between atomic structure and macroscopic properties such as mechanical strength and ductility. Atomic bonding, crystallography, phase equilibrium and phase transformations among topics considered.

MT 220 Principles of Solids II SPRING TERM
Credit, 3 semester hours.

Prerequisite: PH 209.
Study of transport and rearrangement of charge to determine electric and magnetic properties of solids. Semiconductors, superconductors, and magnetic materials among topics considered.

MT 301 Welding Metallurgy.
Credit, 3 semester hours.

Prerequisite: MT 219.
Study of welding and brazing procedures of ferrous and non-ferrous alloys, with consideration of macro and microstructures of welded members.

MT 302 Polymeric Materials.
Credit, 3 semester hours.

Prerequisite: CH 105.
Chemistry and physical properties of rubber and plastic materials. Consideration of both fundamental principles and engineering applications.

MT 304 **Mechanical Behavior of Materials. SPRING TERM**
Credit, 3 semester hours.
Prerequisite: MT 219.
Detailed study of elastic and plastic deformation of materials at room temperature and elevated temperatures. Dislocation theory and microplasticity models considered.

MT 309 **Materials Laboratory: Metallography.**
Cedit, 1½ semester hours.
Prerequisite: MT 219.
Laboratory preparation of both ferrous and non-ferrous samples for microscopic investigation, including photomicroscopy with metallograph microscope.

MT 310 **Materials Laboratory: Heat Treatment.**
Credit, 1½ semester hours.
Prerequisite: MT 219.
Laboratory documentation of the effects of heat treatment in annealing and hardening both ferrous and non-ferrous materials.

MT 324 **Nuclear Metallurgy.**
Credit, 3 semester hours.
Prerequisite: MT 219.
Consideration of nuclear reactors, the production and fabrication of metals and alloys used as reactor components, non-destructive testing, and radiation damage of materials.

MT 331 **Non-ferrous Metallurgy. FALL TERM**
Credit, 3 semester hours.
Prerequisite: MT 219.
The physical metallurgy of aluminum, copper, magnesium, and other non-ferrous metals. Alloying, fabrication, and consideration of materials properties which make non-ferrous metals competitive with steels.

MT 342 **Steels and Their Heat Treatment. FALL TERM**
Credit, 3 semester hours.
Prerequisite: MT 219.
Fundamentals of ferrous physical metallurgy such as iron-carbon phase diagram, transformation diagrams, hardenability, and the effects of alloying elements. Heat treating discussed in terms of resulting microstructures and physical properties.

MT 400 **Materials Reactions.**
Credit, 3 semester hours.
Prerequisite: MT 219.
Consideration of chemical reactions in the liquid and solid state of importance to the field of materials engineering. Topics to include extractive metallurgy, internal oxidation, surface treatment, and recycling of secondary materials.

MT 500 **Research Project.**
Credit, 3 semester hours.
Prerequisites: MT 331, MT 342, plus senior status.
An independent design, theoretical analysis, or laboratory investigation, chosen by the student and approved by the Chairman of the Department. The work is performed by the student with frequent critiques by a faculty member.

MUSIC

Ralf E. Carriuolo, Coordinator

MU 111 **Introduction to Music.**
Credit, 3 semester hours.
Some of the basic forms and styles of music in the Western World. Music Appreciation.

MU 112 **Introduction to World Music.**
Credit, 3 semester hours.
Various non-Western musical styles, their cultures and aesthetics; music of the indigenous cultures of the Americas and the advanced musics of the Near East and Far East; emphasis on India, the Orient, Southeast Asia, Africa and Indonesia.

MU 116 **Performance.**
Credit, 1-8 semester hours; maximum per semester, 1 credit.
Open to all students interested in ensembles or private instruction. Students with adequate scholastic standing may carry this course for credit in addition to a normal program.

MU 150 **Introduction to Music Theory.**
Credit, 3 semester hours.
A basic introduction to the fundamentals of music: notation, physical and acoustical foundations, harmony and melody, modality, tonality, atonality; consonance and dissonance, tension; some introductory composition.

MU 198-199 **Introduction to American Music.**
Credit, 6 semester hours.
Music of the North American continent from the Puritans to the present day; both European and non-European musical traditions, with emphasis on 20th century developments.

MU 201-202 Analysis and History of European Art Music.
Credit, 6 semester hours.
The growth of Western Art Music from its beginnings to the present day. Analysis of musical masterpieces on a technical and conceptual basis.

MU 250-251 Theory and Composition.
Credit, 6 semester hours.
Investigation of music theory in various parts of the world, including the Western Art Tradition. Exercises in the composition of music within these theoretical constructs. Ear training and keyboard harmony.

MU 299 Problems of Music.
Credit, 3 semester hours.
The problem of music as an art form throughout the world. Music aesthetics and its relationship to the performing and composing of music.

MU 300 Studies in Music I.
Credit, 3 semester hours.
Area studies in music and its parent culture. Cultural theory as related to the music; instruments of the area and their etymologies; performance practices; the social role of music, both art and folk. Areas offered depending on availability of staff: China, Japan, the Near East, the Indian sub-continent, Africa, American Indian, Afro-American, Latin America, the Anglo-Celtic tradition, others.

MU 350 Studies in Music II.
Credit, 3 semester hours.
Area studies in musical forms: their history, evolution, and resultant metamorphoses, performance practices, and present day forms extant. Areas offered depending upon availability of staff.

MU 416 Performance.
Credit, 3 semester hours.
Prerequisite: Permission of the departmental staff and a faculty advisor.
Preparation and presentation of an instrumental or vocal performance illustrating sufficient proficiency to warrant the awarding of a degree in World Music.

MU 500 Seminar in Advanced Research.
Credit, 3 semester hours.
Prerequisite: Permission of the instructor.
Bibliographical studies of major world music areas; investigation of current and historical musicological theories, analysis and criticism of musicological area literatures.

MU 550 Studies in Urban Ethnic Music.
Credit, 3 semester hours.
Prerequisite: Permission of the instructor.
An investigation of the music tradition of inner city ethnic groups; emphasis on the operation of the oral tradition in the preservation of cultural values and customs as evidenced through music. Classroom discussion will be balanced by field research in the urban vicinity.

MU 599 Independent Study.
Credit, 1-3 semester hours per semester with a maximum of 12.
Prerequisites: Consent of faculty member and coordinator of department.
Opportunity for the student under the direction ot a faculty member to explore an area of interest to him. This course must be initiated by the student.

PHILOSOPHY

John Collinson, Dean, Arts and Sciences

PHL 111 Introduction to Problems of Philosophy.
Credit, 3 semester hours.
Man's place in the universe, how we discover truth, the nature of beauty and the good, the basis of moral choices, etc.

PHL 113 History of Philosophy through the Renaissance.
Credit, 3 semester hours.
Chronological introduction to problems of philosophy. Pre-Socratics, Plato, Aristotle, Medieval and Renaissance philosophers.

PHL 114 History of Modern Philosophy.
Credit, 3 semester hours.
Chronological introduction to problems of philosophy. Seventeenth Century to the present, including Descartes, Hume, Hegel, Nietzsche, and contemporary philosophers.

PHL 124 Logic and Scientific Method.
Credit, 3 semester hours.
Introduces the student to deduction, warranted induction, and scientific description.

PHL 213
Contemporary Issues in Philosophy.
Credit, 3-6 semester hours.

Content varies with the interest of the instructor and the students. Current philosophical thinking in such areas as natural science, social science, metaphysics, religion, aesthetics, theory of knowledge, language, existentialism, ethics, and positivism.

PHL 222
Ethics in a Changing Society.
Credit, 3 semester hours.

Prerequisite: PHL 111 or 113.
The major ethical systems in the framework of contemporary society. Ethical norms which point to goals of life and their relation to the issues in science, business, the professions, and other human activities.

PHL 225
Symbolic Logic.
Credit, 3 semester hours.

Prerequisite: PHL 124 or M121.
Formal deductive systems, including the propositional calculus, the calculus of functions, independence of axioms, primitive symbols, interpretation, paradoxes, theory of types, Goedel's theorem.

PHL 240
Philosophy of Science.
Credit, 3 semester hours.

Prerequisite: PHL 111.
A study of the nature of scientific method, the logic of scientific explanation and theory construction, philosophical problems of selected sciences, and questions peculiar to the social sciences.

PHL 250
Philosophy of Religion.
Credit, 3 semester hours.

Prerequisite: PHL 111.
An examination of some philosophical notions used in religious discourse; meaning, truth, fact, being, logic, etc.

PHL 260-261
Development of Jewish Thought.
Credit, 6 semester hours.

The development of Jewish thinking and philosophy and the major issues and movements with which it has become involved.

PHL 322
Analysis and Criticism of the Arts.
Credit, 3 semester hours.

Prerequisite: At least 3 semester hours of Philosophy.
The language used to talk about works of art. Form, content, expression, values, the ontological status of the art object.

PHL 599
Independent Study.
Credit, 1-3 semester hours per semester with a maximum of 12.

Prerequisite: Consent of faculty member and dean of Arts and Sciences.
Opportunity for the student under the direction of a faculty member to explore an area of interest to him. This course must be initiated by the student.

PHYSICAL EDUCATION

Donald Wynschenk, Coordinator of Physical Education

PE 111-112
Physical Education (men).
No credit, required for graduation.

Fundamentals and skills of carry-over sports such as tennis, golf, volleyball, paddleball, handball, bowling, skating, swimming, sailing, skiing, softball, badminton, and squash. Understanding and development of skills in spectator team sports such as basketball, soccer, touch football, and softball. Calisthenics and adaptive exercise program.

PE 113-114
Physical Education (women).
No credit, required for graduation.

Fundamentals and skills of carry-over sports such as tennis, golf, handball, bowling, sailing, tennis, skiing, skating, swimming, softball, badminton, and squash. Understanding and development of skills in spectator team sports such as baskeball, soccer, volleyball, and softball. Calisthenics and adaptive exercise.

PE 221-222
Personal Health.
No credit.

Required of all day freshmen who are exempt from PE 111-112 or PE 113-114 due to medical or physical reasons. Personal aspects of hygiene, the principles of healthful living. Mental health, venereal disease, reproduction and marriage, birth control, and the effects of drugs, alcohol, and tobacco on human behavior, and the value of systematic exercise.

PHYSICS Kee W. Chun, Chairman

PH 103-104
General Physics.
Credit, 6 semester hours.

Cannot be taken for credit by students majoring in chemistry, physics, or engineering.
Basic concepts of classical and modern physics, such as fundamental laws and phenomena of mechanics, electricity, magnetism, heat, and optics. Conservation principles, relativity and quantum theory, atomic, nuclear, and solid state physics, geophysics, astrophysics, biophysics, laser and lunar science.

PH 105-106 General Physics Laboratory.
Credit, 2 semester hours.
May be elected concurrently with PH 103-104.
Laboratory Fee: $18.00 per semester.

PH 108 Physics I w/Lab.
Credit, 3 semester hours.
Prerequisite: M 117 or Instructor's consent.
Fundamental concepts and mathematical exposition, including calculus, mechanics, statics, kinematics, Newton's laws, work, energy, power, conservation of energy and momentum, rotational concepts, simple harmonic motion.
Laboratory Fee: $18.00.

PH 201 Techniques in Nuclear Physics.
Credit, 2 semester hours.
Prerequisites: Two semesters of a laboratory science and Instructor's consent.
The instruments and methods of nuclear physics. Experiments may be completed in biology, chemistry, engineering, or physics, according to the interest of the student.

PH 209 Physics II w/Lab.
Credit, 3 semester hours.
Prerequisites: PH 108, M 118.
Fundamental concepts and mathematical exposition, including calculus, electricity and magnetism, electrostatics, direct currents, magnetic effects of a current, electrical instruments, ballistic galvanometer, induced E.M.F., inductance and capacitance, simple harmonic motion, physical basis for A.C. circuits, bridge measurement, potentiometer measurements.
Laboratory Fee: $18.00.

PH 210 Physics III w/Lab.
Credit, 3 semester hours.
Prerequisites: PH 108 and M 118.
Fundamental radiation topics include heat, sound, light; simple harmonic motion, generation of mathematical wave forms, wave propagation, laser demonstration of optical principles, lens systems, theory of color, wave interference, gratings, prisms, filters, spectroscopy.
Laboratory Fee: $18.00.

PH 211 Physics IV.
Credit, 3 semester hours.
Prerequisite: PH 210 or PH 104.
Modern physics fundamentals. Twentieth-century developments in physics. Special relativity, quantum theory of radiation, de Broglie waves, the Bohr atom, elementary wave mechanics, the solid state, crystal structure, semiconductors, and lasers.

PH 301 Analytical Mechanics.
Credit, 3 semester hours.
Prerequisites: M 204, PH 108, or Instructor's consent.
Intermediate analytical mechanics. Statics and dynamics of particles and rigid bodies with emphasis on the theory of motion under central forces and on the use of the generalized coordinates; introduction to an elementary Lagrangian and Hamiltonian formalism; small vibrations.

PH 315 Nuclear Physics.
Credit, 3 semester hours.
Prerequisite: PH 211 or Instructor's consent.
Elementary nuclear physics. Nuclear structure, natural radioactivity, induced radioactivity, nuclear forces, and reactions, fission and fusion, reactors, and topics of special interest.

PH 340 Lasers.
Credit, 3 semester hours.
Prerequisite: PH 210 or Instructor's consent.
Laser theory, construction and application to latest engineering and scientific uses.

PH 351 Intermediate Electricity and Magnetism.
Credit, 3 semester hours.
Prerequisites: PH 209 and M 204.
Electric field, potential, Gauss Law, dipoles, Poisson, and Laplace equations, dielectric theory, steady magnetic fields, electromagnetic induction, magnetic properties of matter. Maxwell's equations, L-C-R circuits, A.C. circuit analysis, vacuum tube and transistor circuit theory.

PH 361 Modern Optics.
Credit, 3 semester hours.
Prerequisite: PH 210.
Solid state spectroscopy from the point of view of the research physicist and chemist. Modern optical devices including television pick-up tubes, electro- and injection-luminescent devices, image amplifiers, lasers and holography, fiber-optics, opto-electronics for computers.

PH 373 Advanced Laboratory.
Credit, 2 semester hours.
Prerequisite: PH 211.
Selected experiments in atomic and nuclear physics including nuclear radiation and decay, quantization of charge and light energy, and nuclear magnetic resonance.
Laboratory Fee: $18.00.

PH 400 Statistical Mechanics.
Credit, 3 semester hours.
Prerequisite: Instructor's consent.
An introductory course in classical and quantum statistical mechanics. The canonical ensemble; Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics and their applications; statistical interpretation of thermodynamics; transport processes.

PH 401 Atomic Physics.
Credit, 3 semester hours.
Prerequisite: PH 211.
Structure and interactions of atomic systems including Schrodinger's equation, atomic bonding, scattering and mean free path, radiative transitions, and laser theory.

PH 404 Senior Project.
Credit, 0-6 semester hours.
Open only to senior Physics Majors. Individual projects in experimental or theoretical physics to be carried out under direct supervision of a faculty advisor.

PH 406 Solid State Physics.
Credit, 3 semester hours.
Prerequisite: PH 211.
Elementary principles of the electrical and physical behavior of solids as applied to semiconductor, metallurgy, and magnetically activated solid state devices.

PH 451 Elementary Quantum Mechanics.
Credit, 3 semester hours.
Prerequisite: PH 211 or Instructor's consent.
An elementary treatment of nonrelativistic quantum mechanics. Schrodinger's equation with its applications to atomic and nuclear structure; collision theory; radiation; introductory perturbation theory.

PH 452 Thermodynamics.
Credit, 3 semester hours.
Prerequisites: PH 108 and Instructor's consent.
An introduction to thermodynamics and kinetic theory. Laws of thermodynamics, entropy, application to simple physical and chemical systems; thermodynamic inequalities and equilibrium; phase transitions; properties of ideal gases; low temperature physics.

PH 470 Theory of Relativity.
Credit, 3 semester hours.
Prerequisite: Instructor's consent.
Introductory course on Einstein's theory of Relativity. Special theory of relativity including the Lorentz Transformation, Minkowsky geometry, relativistic mechanics, and electromagnetism. General theory of relativity including principle of equivalence, Einstein's theory of gravitation, graviton.

PH 599 Independent Study.
Credit, 1-3 semester hours per semester with a maximum of 12.
Prerequisites: Consent of faculty member and chairman of department. Opportunity for the student under the direction of a faculty member to explore an area of interest to him. This course must be initiated by the student.

POLITICAL SCIENCE

Caroline A. Dinegar, Chairman

PS 121 American Government and Politics.
Credit, 3 semester hours.
The American Political System stressing the constitutional foundations, structures and functions of the national government, the electoral process, and interstate relationships.

PS 122 State and Local Government and Politics.
Credit, 3 semester hours.
The politics of state and local government in the United States. Emphasis on the problems of cities, revenue sharing, community power structures, welfare, public safety, the state political party, big-city political machines, interest groups, state legislatures, the governor, the mayor, courts and judicial reform.

PS 164 Political and Social Thought of the Third World.
Credit, 3 semester hours. (Same as SO 124) (Formerly PS 124)
The emergence of the Third World as a decisive force in world, political, social, economic, and cultural thought.

PS 201-202 Women and the Political Process.
Credit, 6 semester hours.
The political process in relation to the economic, social, cultural and psychological aspect of women. Structured to meet the contemporary social and political introspection concerning women in an egalitarian society. May be taken for one term and 3 credits as well as a full year for 6 credits.

PS 203 American Political Thought.
Credit, 3 semester hours.
American political thought from colonial times to the present. Revolutionary models, party development, and federalist forces along with the philosophical foundations of states rights, the agrarian movement, social Darwinism, and the Black protest movement.

PS 216 **Urban Government and Politics.**
Credit, 3 semester hours.
The organizational and administrative government at the municipal level with special emphasis upon the problems of modern urban America in relation to social and political development.

PS 222 **United States Foreign Policy.**
Credit, 3 semester hours.
A quantitative and qualitative examination of the foreign policy process for the United States. The strategy and tactics of a superpower in the twentieth century and the determinants involved in the foreign policy and military policy areas.

PS 241 **International Relations.**
Credit, 3 semester hours. (Formerly PS 221)
Forces and structures operating at the international level in the modern nation state system: the foreign policy process and the decision-making process, the impact on traditional interstate behavior of the decolonization process, and the economic and political developments since World War II.

PS 243 **International Law and Organization.**
Credit, 3 semester hours. (Formerly PS 223)
Prerequisite: PS 221.
The traditional as well as modern approach to international law and organization; major emphasis on the contribution of law and organization to the establishment of a world rule of law and world peace. The League of Nations system and the United Nations system are analyzed.

PS 261 **Modern Political Analysis. (Formerly PS 120)**
Credit, 3 semester hours.
A basic introduction to the new approaches of modern political analysis. Personality and Politics, Political Socialization, Group Theory, Decision Making, Systems Analysis and Political Violence will be among the areas covered.

PS 281 **Comparative Political Systems: East Asia.**
Credit 3 semester hours. (Formerly PS 110)
The traditional and modern political and social structures of China, Japan and Korea as well as the functioning of the political system within each country.

PS 282 **Comparative Political Systems: Europe.**
Credit, 3 semester hours.
The political characteristics of European nations. Emphasis will be given to governmental, political, social and economic institutions and structures as well as the impact of modern European developments on integration. (France, Germany, United Kingdom, USSR, Yugoslavia, Czechoslovakia, Sweden and Switzerland.)

PS 283 **Comparative Political Systems: Latin America.**
Credit, 3 semester hours.
Political modernization and development in Latin America. Political institutions, national identity, leadership, integration, political socialization, and political ideologies.

PS 284 **Comparative Political Systems: Africa.**
Credit, 3 semester hours.
Emphasis is given to political institutions, political parties, and the transition from colonialism to nationhood. Nigeria, Kenya, Uganda, and South Africa will be among the nations examined.

PS 285 **Comparative Political Systems: Middle East.**
Credit, 3 semester hours.
Political, social and economic structures, the impact of the west, the emergence of national states, and the process of political development. Individual countries such as Turkey, Egypt, Lebanon, Syria, Jordan, Iraq and Iran will be studied.

PS 304 **Political Parties.**
Credit, 3 semester hours.
Prerequisite: PS 121.
An historical and functional analysis of the American political party system, including a study of interest groups, public opinion, electoral behavior, political leadership, and modern proposals for the reorganization of the existing party system.

PS 308 **Legislative Process.**
Credit, 3 semester hours.
Prerequisite: PS 121.
An analysis of the legislative process in the American political system. Stress will be placed on legislative functions, selection of legislative candidates, organization of Congress and State legislatures, legislative leadership, the committee system, the role of the lobbyists, legislative voting behavior, and power.

PS 309 **The American Presidency.**
Credit, 3 semester hours.
The origins of the Presidency and a number of presidential models. The role of the President as Commander-in-Chief, legislative leader, party leader, administrator, manager of the economy, director of foreign policy, and advocate of social justice. The nature of Presidential decision making as well as the source of presidential authority, power, and influence.

PS 332 **Constitutional Law.**
Credit, 3 semester hours. (Formerly PS 302)
Prerequisite: PS 121.
The principles and concepts of the United States Constitution as revealed in leading decisions of the Supreme Court through the process of judicial review.

PS 368 **Political Sociology.**
Credit, 3 semester hours. (Same as SO 318)
(Formerly PS 318)
Prerequisite: SO 113. (Offered even years, spring semester.)
Concepts, theories, and basic issues in the sociological analysis of political systems; social factors in political attitudes and behavior with emphasis on understanding the functional and dysfunctional aspects of socio-political coordination and conflict.

PS 369 **Public Opinion and Social Pressure.**
Credit, 3 semester hours. (Same as SO 418)
(Formerly PS 418)
Prerequisites: SO 113, P 111.
An intensive analysis of the nature and development of public opinion with particular consideration of the roles, both actual and potential, of communication and influence.

PS 390 **Political Modernization.**
Credit, 3 semester hours.
A comparative analysis. Political change and development. The process of political transition, political integration and nation-building. Institutional developments, including political parties, military elites, youth, intellectuals, the bureaucracy, economic development, and political culture.

PS 461 **Political Theory, Ancient and Medieval.**
Credit, 3 semester hours. (Formerly PS 401)
Prerequisite: HS 111.
Western political thought from Plato to Sir Thomas More. Emphasis upon basic concepts and questions consistently raised by political theorists. Required for all Political Science majors.

PS 462 **Political Theory, Modern and Contemporary.**
Credit, 3 semester hours. (Formerly PS 402)
Prerequisite: HS 112.
A continuation of PS 401, the theories of selected writers from Thomas Hobbes to the present. Required for all Political Science majors.

PS 499-500 **Senior Seminar in Political Science.**
Credit, 3 semester hours.
(Formerly PS 416-417)
Prerequisite: Permission of the department chairman.
The construction and preparation of an individual research project in Political Science by the student and the presentation of that project in oral form within the seminar and in written form as the Seminar Thesis. Required of all Political Science majors.

PS 599 **Independent Study.**
Credit, 3 semester hours.
Directed research on special topics to be decided upon in consultation with the Chairman of the Department.

PSYCHOLOGY David Brown, Chairman

P 111 **Psychology.**
Credit, 3 semester hours.
Important principles of human behavior. Motivation, emotion, learning, personality, intelligence, etc. The utilization of psychological knowledge in relation to everyday human activities.

P 212 **Business and Industrial Psychology.**
Credit, 3 semester hours.
Prerequisite: P 111.
Psychological principles and research findings pertinent to administration in business and industry. Contemporary research of behavior factors in managerial contexts.

P 216 **Developmental Psychology.**
Credit, 3 semester hours.
Prerequisite: P 111.
Processes of development of the child, adolescent and adult, motivation changes in interests, attitudes, and abilities, social and cultural influences.

P 220 **Consumer Behavior.**
Credit, 3 semester hours.
Prerequisite: P 111.
Principles and methodology in studying consumer decisions and actions. Internal and external influences upon consumer behavior; decision processes; relationships between consumers and both private and public organizations.

P 301 **Statistics for Behavioral Sciences.**
Credit, 3 semester hours.
Prerequisite: 3 semester hours of mathematics at the college level.
Consideration of statistical concepts pertinent to the behavioral sciences. Application of statistical techniques to experimental design and research findings. Required of Psychology majors.

P 305 **Research Design and Methods in Psychology I.**
Credit, 3 semester hours.
Prerequisites: P 111 and P 301.
Methods of design and analysis in psychological research. Consideration of psychophysical methods, general variables, design problems, problems of inference. Required of Psychology majors.

P 306 **Research Design and Methods in Psychology II.**
Credit, 3 semester hours.
Prerequisite: P 305.
Methods of design and analysis in perception, learning, motivation, concept-formation, etc. Group and individual research projects.

P 315 **Psychology of Learning.**
Credit, 3 semester hours.
Prerequisite: P 111.
Psychological principles underlying learning and teaching. Learning theories and their application to behavioral change.

P 321 **Social Psychology.**
Credit, 3 semester hours. (Same as SO 320)
Required of Psychology majors.
Prerequisites: P 111 and SO 113.
The interdependence of social organizations and behavior. The interrelationships between role systems and personality; attitude analysis, development and modification; group interaction analysis; social conformity; social class and human behavior.

P 336 **Abnormal Psychology.**
Credit, 3 semester hours.
Prerequisite: P 111.
Psychological and organic factors involved in personality disorganization. The psychodynamics and classification of psychoses, neuroses, brain disorders, personality disorders, psychophysiological disorders, transient stress disorders, and mental retardation.

P 341 **Psychological Theory I.**
Credit, 3 semester hours.
Prerequisites: P 305 and senior class status.
The historical background of contemporary issues in modern psychological schools.

P 342 **Psychological Theory II.**
Credit, 3 semester hours.
Prerequisite: P 341.
Continuation of Psychological Theory I. Emphasis placed on contemporary problems of psychology in the light of twentieth century developments in theory.

P 350 **Theory and Principles of Psychological Measurement.**
Credit, 3 semester hours.
Required of Psychology majors.
Prerequisite: P 301.
The bases for constructing and evaluating standardized tests in psychological, educational, and industrial applications.

P 361 **Physiological Psychology.**
Credit, 3 semester hours.
Prerequisites: P 111, and SC 121, 122 or 123.
Endocrinological, neural, sensory, and response mechanisms involved in learning, motivation, adjustment, emotion, and sensation.

P 370 **Psychology of Personality.**
Credit, 3 semester hours.
Prerequisites: P 216 and P 315.
Major personality theories and their implications for understanding both normal and deviant personality developments.

P 599 **Independent Study.**
Credit, 1-3 semester hours per semester with a maximum of 12.
Prerequisites: Consent of faculty member and chairman of department.
Opportunity for the student under the direction of a faculty member to explore an area of interest to him. The course must be initiated by the student.

PUBLIC ADMINISTRATION

Joseph A. Parker, Chairman

PA 101 **Fundamentals of Communications.**
Credit, 3 semester hours.
An introduction to the various media of public information, including newspapers, magazines, radio, television, trade publications, public relations, and the film.

PA 102 **Problems of Public Communications.**
Credit, 3 semester hours.
Prerequisite: PA 101 or equivalent.
An examination of such problems as influence of the media, aspects of social interactions involving communications, value/beliefs, myths. Students will examine the kinds of writing involved with the media and begin to do some writing on their own.

PA 206 **Sound Workshop.**
Credit, 3 semester hours.
Lectures, demonstration and lab practice. Concerned with sound as used in radio, television, and film.

PA 208 **Radio Broadcasting.**
Credit, 3 semester hours.
Prerequisite: PA 206.
Advanced radio production. The student writes scripts and coordinates with production for dramatic and non-dramatic presentation. Informal audience participation programming is included.

PA 210 **Film Production, Theory and Practice.**
Credit, 3 semester hours.
Prerequisite: Permission of instructor.
Stresses the understanding of communication through film. Although whole class sessions will be held, some with illustrated lectures, small group sessions will be held on the basic techniques of film making.
Laboratory Fee: $15.00.

PA 220 **Film Production, Industrial.**
Credit, 3 semester hours.
Prerequisites: PA 210 or permission of instructor.
Transformation of an idea into film: initial analysis, film script, preproduction planning, nature of the production process. Production of a short film by team. Emphasis is on industrial film making.
Laboratory Fee: $20.00.

PA 230 **Film Production, Advertising.**
Credit, 3 semester hours.
Prerequisites: PA 210 or permission of instructor.
Creative process involved in translating advertising copy to film based upon advertising objectives and consumer motivation and appeals. Production of "Spots" by teams.
Laboratory Fee: $20.00.

PA 301 **Principles of Public Administration.**
Credit, 3 semester hours.
Prerequisites: PS 121 and PS 122.
The development, organization, functions, and problems of national, state, and local administration.

PA 302 **Procedures in Public Administration.**
Credit, 3 semester hours.
Prerequisite: PA 301.
Administration and management in government through the offices of planning, finance, personnel, and procurement.

PA 307 **Urban and Regional Problems.**
Credit, 3 semester hours.
Methods and analysis of decision making related to urban problems. Topics include housing, racial tensions, poverty, transportation, architectural planning, pollution, and urban politics.

PA 320 **Municipal Finance and Budgeting.**
Credit, 3 semester hours.
Prerequisite: A 114 Municipal Accounting.
This course involves the analysis of fiscal policy on the municipal level. The financing of and budgeting for the activities, services, and improvements determined as necessary by elected representatives.

PA 390 **Administrative Law.**
Credit, 3 semester hours.
The basic legal arrangement of administrative organization; rules governing use and exercise of administrative powers; legal procedures for enforcement of bureaucratic responsibility.

PA 408 **Collective Bargaining in the Public Sector.**
Credit, 3 semester hours.
Analysis of collective bargaining in the public sector with emphasis on legislation pertaining to government employees.

PA 449 **Independent Study.**
Credit, 3 semester hours.
Independent study to be performed in a project of interest to the student and under the direction of a faculty member to be designated by the department chairman. Project, student, and faculty director must be approved by both the department chairman and the Dean of Business.

PA 490 **Principles of Public Health Administration.**
Credit, 3 semester hours.
An examination of the patterns of public health activities, including the delivery systems in the United States.

PA 491 **Public Health Law.**
Credit, 3 semester hours.
The role of law in public health. Enforcement and administration: legal tools and administrative technique of public health enforcement and administration.

PA 512 **Seminar in Public Administration.**
Credit, 3 semester hours.
Selected topics related to public administration will be discussed.

RETAILING W. Smith, Acting Chairman

RET 209 Retail Advertising and Sales Promotion. Credit, 3 semester hours.

Prerequisite: BA 107.
This course is intended to develop a sound approach to retail advertising. The difference in advertising techniques between various types of stores is stressed. The determination of what, how and when to promote and measurement of the retail market is also emphasized during the semester.

RET 212 Textiles. Credit, 3 semester hours.

Prerequisite: BA 105.
A study of the nature, source, characteristics, applications, and uses of basic textile materials. The processes of manufacture are studied. End uses studied include women's, girls', infants', men's and boys' wear. Swatches are analyzed by students in class.

RET 213 Furniture and Apparel Accessories. Credit, 3 semester hours.

Prerequsite: BA 105.
Historical background of furniture, floor coverings, glassware, chinaware, and interior decoration, manufacturing processes and brand names. The uniqueness and design of apparel accessories is studied.

RET 215 Retail Credit Management. Credit, 3 semester hours.

Prerequisite: A 111.
This course treats retail credit operations. The consideration of prospective credit customers, the decision-making process involved in accepting or rejecting credit and finally, the collection of accounts are all viewed as they contribute to company objectives.

RET 303 Fashions in Retailing. Credit, 3 semester hours.

Prerequisite: BA 105.
A history of fashion design in relation to the retail field. The work of prominent French, American and English designers is studied. Stress is placed on sales promotion aspects of the fashion industry as it relates to the retail field.

RET 310 Retail Merchandise Management. Credit, 3 semester hours.

Prerequisites: BA 105 and BA 301.
Deals with the planning and control of stock to contribute to achievement of predetermined objectives. Current concepts, objectives, planning, pricing and inventory control are all discussed.

SCIENCE AND BIOLOGY

H. Fessenden Wright, Chairman and Director of Environmental Studies

SC 111-112 Physical Science. Credit, 6 semester hours.

The meaning of scientific concepts and terms and their relation to other areas of learning and to daily living. Development and unity of physical science as a field of knowledge. Subject material includes astronomy, physics, chemistry, and geology.

SC 113 Physical Science Laboratory. Credit, 1 semester hour.

Prerequisite: SC 111, to be taken with SC 112 or after.
Direct experience with physical experimentation. Training in design, conduct, analysis, and reporting of physical experiments. Emphasis on historically important theories and experiments. Use of simple equipment leading to direct observable results.

Laboratory Fee: $18.00.

SC 115 Nutrition and Dietetics. Credit, 3 semester hours.

Various types of foods, vitamins, minerals, enzymes, and hormones and the processes and products of digestion. Factors and effects of malnutrition, food additives, and spoiled food. Concepts and composition of balanced and special diets.

SC 116 Fundamentals of Food Science. Credit, 3 semester hours.

Food sources, methods of preservation and storage, spoilage, sanitation, food contaminants, and food as a waste product are discussed at an elementary level. One hour of class time per week will be devoted to laboratory or field work.

Laboratory Fee: $10.00.

SC 121-122 General Biology. Credit, 6 semester hours.

The major areas of biology, the concepts and theories of the science. Cell structure and function are stressed during the discussion of the various organ systems. Genetics, animal behavior, ecology, development, evolution, and taxonomy are covered during the second term.

SC 123 Human Biology. Credit, 3 semester hours.

Prerequisite: SC 121.
A condensed study of Human Anatomy and Physiology with some aspects of nutrition and disease included, and an introduction to Population Genetics and Physical Anthropology. Designed to replace SC 122 for those majoring in Psychology, Law Enforcement, and Sociology and Social Services. For laboratory credit, where needed, SC 132 may be taken concurrently or with permission after completing course work. For laboratory credit, where needed, SC 131 or 132 should be taken.

SC 126 Astronomy. Credit, 3 semester hours.

An introduction to astronomy and the methods employed by astronomers in obtaining and analyzing information of the universe around us.

SC 131-132 General Biology Laboratory. Credit, 2 semester hours.

To be taken with or after SC 121 or SC 122.
The microscopic examination of cells and tissues and the dissection of various organisms from the earthworm to the fetal pig. Other experiments relate to classroom materials.

Laboratory Fee: $18.00 per semester.

SC 135 Earth Science. Credit, 3 semester hours.

A dynamic systems-approach to phenomena of geology, oceanography, and meterology. Emphasis on inter-relations of factors and processes and on importance of subject matter to human affairs. Suitable for non-science as well as as for science majors.

SC 146 Fundamentals of Oceanography. Credit, 3 semester hours.

Description of major aspects of geological, chemical, physical, and biological oceanography. Emphasis on human use and disuse of oceans. Suitable for non-science as well as science majors.

SC 201 Genetics. Credit, 3 semester hours.

Prerequisites: SC 122, SC 123, SC 251, or SC 252.
Mendelian genetics and developments that have produced the modern concept of inheritance; the role of DNA and theories of the chemical basis of heredity. Various aspects of human, medicinal, and population genetics and the role of these in evolutionary processes.

SC 202 Genetics Laboratory. Credit, 2 semester hours.

Prerequisite: SC 201.
Theory and techniques using flies, yeasts, bacteria, and viruses to illustrate the classical genetic theories. An introduction to biometrics. One assigned lecture-laboratory session and one laboratory period unassigned.

Laboratory Fee: $18.00.

SC 211-212 Human Anatomy and Physiology. Credit, 6 semester hours.

Prerequisites: SC 122 and SC 132 or SC 251.
The essentials of human anatomy and physiology. Systems studied one at a time, taking up the anatomical features first and then the physiological functions. Both normal and pathological conditions discussed whenever possible.

SC 213-214 Human Anatomy and Physiology Laboratory. Credit, 2 semester hours.

Prerequisites: SC 122 and SC 132 or SC 251.
To be taken with or after SC 211-212.
Examination of organs and organ systems, using plastic models, slides of cells and tissues, human bones, and dissection of preserved mammalian organs (cow's eyes, sheep's brain). Transparencies and film loops used as supplemental material.

Laboratory Fee: $18.00 per semester.

SC 221 Human Ecology. Credit, 3 semester hours.

Ecosystem structure and function. Understanding human involvement in and alteration of ecosystems through use of resources and pollution, economic, cultural and behavioral factors, overpopulation.

SC 222 Ecology. Credit, 3 semester hours.

Prerequisites: SC 251 or SC 252.
The interactions of living organisms, including man, with each other and with their environment. Discussion of population regulation, habitats, food supply, predation, and distribution, community structure regulation, succession, and diversity: ecosystems, geochemistry, and energy.

SC 224 Field Ecology. Credit, 2 semester hours.

Prerequisites: SC 222 (May be taken concurrently).
One hour of class and one afternoon of laboratory in which basic ecological concepts will be demonstrated by the gathering and interpretation of field and laboratory data.

Laboratory Fee: $18.00.

SC 225 Evolution.
Credit, 3 semester hours.

Prerequisite: SC 122.
Biochemical and organic evolution studied. Physical anthropology and paleontology introduced, and the relationship of evolution to genetics and ecology.

SC 227 Entomology w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 122 and SC 132 or SC 251.
Study of classification, evolution, anatomy, development, ecology, life-cycle, genetics, and systematics of insects, arachnoids, and myriapods. Insects as major competitors of man, as disease carriers, and their influences on history and culture. Fundamental biological principles as related to insects. Laboratory: culture, observation, and dissection of insects.

Laboratory Fee: $18.00.

SC 251 Zoology w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 121 and SC 131 or Biology major.
The general morphology and physiology of animals from the amoeba to man, taken phylum by phylum. Dissection of representative animals from the major phyla, special emphasis on the Phyla Invertebrata.

Laboratory Fee: $18.00.

SC 252 Botany w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 121 and SC 131 or Biology major.
The comparative structure, function, habitat, and evolutionary relationships of plants, techniques of plant identification and classification. Field trips conducted when possible.

Laboratory Fee: $18.00.

SC 291-292 Biology Laboratory Teaching.
Credit, 2 semester hours.

Prerequisites: SC 122 and SC 132, and permission of the instructor.
Designed for prospective teachers, department majors, and laboratory assistants. Students supervised by an instructor in techniques concerning laboratory instruction, testing, grading, purchase, and inventory of supplies and equipment.

SC 301 Microbiology w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 121 and SC 131; or SC 251 or SC 252; CH 103.
A history of microbiology and a survey of microbial life. Bacteria as characteristic protoypes of all microorganisms; the environment, growth, reproduction, metabolism, and relationship to man of microorganisms.

Laboratory Fee: $18.00.

SC 302 Bacteriology w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 122 and SC 132; CH 103.
Theoretical and laboratory study of the morphology, physiology, and classification of bacteria and other microorganisms. The application of these facts to agriculture, industry, sanitation, public health, and disease.

Laboratory Fee: $18.00.

SC 303 Histology w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 121 and SC 131 or SC 251.
Microscopic and chemical structure of organs and tissues and their cell constituents. Microscopic observations, tissue staining, and slide preparation.

Laboratory Fee: $18.00.

SC 307 Comparative Vertebrate Anatomy w/ Lab.
Credit, 4 semester hours.

Prerequisite: SC 251.
The structure, origin, and evolutionary history of the vertebrate organ systems. In the laboratory, representative species of each vertebrate class dissected, with attention given to the individual organ systems.

Laboratory Fee: $18.00.

SC 308 General Physiology w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 251-252, CH 105-106, PH 103-104, PH 105-106.
Basic theories of physiology as applied to plants and animals. Practical aspects and experimental techniques studied in the laboratory.

Laboratory Fee: $18.00.

SC 309 Plant Morphology and Taxonomy w/Lab.
Credit, 4 semester hours.

Prerequisite: SC 252.
Comparative plant structure and reproduction, particularly as related to the classification of plants. Laboratory parallels the classroom, involving examination of microscopic slides, models, preserved specimens, and gross structures of dissected materials.

Laboratory Fee: $18.00.

SC 331 Animal Behavior.
Credit, 3 semester hours.

Prerequisites: SC 122 and P 111.
Behavioral patterns of animals studied on a comparative basis. Laws and principles of ethology related to genetics, psychology, ecology, evolution, physiology, and social structure.

SC 361 Biochemistry I w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 122, SC 132, SC 251, and CH 106.
Functional groups of organic compounds, the physiological properties of these classes of compounds, and the mechanisms of their elimination from the system. The interaction and synthesis of these compounds will also be studied. Lipid and carbohydrate metabolism.

Laboratory Fee: $18.00.

SC 362 Biochemistry II w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 361 or CH 104-108 or CH 301-302; and SC 122, SC 132.

Amino acids, proteins, enzymes, coenzymes, vitamins, carbohydrates, nucleaic acids, lipids, and certain alkaloids are discussed as to their chemical, physical, and biological properties. Isolated enzyme reactions and the more important metabolic pathways are examined.

Laboratory Fee: $18.00.

SC 401 Embryology w/Lab.
Credit, 4 semester hours.

Prerequisite: SC 251.

Origin and development of tissues, organs, and organ-systems during the embryonic and post-embryonic stages. In the laboratory, the chick grown and studied at various stages.

Laboratory Fee: $18.00.

SC 402 Cytology w/Lab.
Credit, 4 semester hours.

Prerequisite: SC 362.

Structure and basic concepts of cellular and tissue function on the molecular, subcellular, and cellular level, problems and techniques of cellular biology. Tissue culture techniques in laboratory. The microscope and audio-visual equipment also employed.

Laboratory Fee: $18.00.

SC 501 Parasitology w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 251; SC 131 or SC 302.

Life history, physiology, morphology, reproductive cycle, and economic importance of most common parasites of plants and animals. Spread and control of communicable and organic diseases.

Laboratory Fee: $18.00.

SC 502 Fresh Water and Marine Biology.
Credit, 4 semester hours.

Prerequisites: SC 251, SC 252, and SC 222.

Aquatic organisms, their life-cycles, and their ecological factors. Causes of pollution when equilibria are upset.

Laboratory Fee: $18.00.

SC 503 Pathology w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 212, SC 251, and SC 301.

Causes, symptoms, progress, effect and control of diseases of animals, primarily man. Laboratory observation of diseased cells, tissues, and organs will be conducted partly at the University of New Haven and partly at St. Raphael's Hospital.

Laboratory Fee: $18.00.

SC 504 Phycology and Mycology w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 251 and SC 252.

Fresh-water and certain marine algae and the various types of fungi. Structure, physiology, life-cycles, reproduction, nutrition, ecology, their function as disease producers.

Laboratory Fee: $18.00.

SC 505 Neuro-endocrine Physiology.
Credit, 3 semester hours.

Prerequisites: P 111; SC 123 or SC 212.

Morphology and physiology of the neurological and endocrine systems as related to the control of body functions. Relationship to behavior with examples from psychobiology and ethology.

SC 506 Food Science and Technology.
Credit, 3 semester hours.

Prerequisites: SC 301-302; SC 361-362.

Man's food, its spoilage, preservation, and sanitation are presented. Food additives and the waste and pollution of the food industry are also studied.

SC 507 Characterization and Treatment of Wastes w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 135, SC 306, SC 361-362.

The types of waste materials generated by agriculture, industry, transportation, municipalities, and individuals are classified, and the methods of their identification are studied. The various methods of treatment of each type of waste material are covered.

Laboratory Fee: $18.00.

SC 508 Water Quality Control and Pollution Ecology w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 301 or SC 302; SC 306 and SC 507.

Recognition of the organisms of polluted waters and the selection of the most appropriate means of collection and analysis. Proper choice and use of analytical methods for determining water quality with the methods of analyzing the data. The most efficient methods to establish water purity of the desired quality and the ecology of polluted water containing various wastes.

Laboratory Fee: $18.00.

SC 509 Scientific Photographic Documentation.
Credit, 3 semester hours.
2 lectures and 1 laboratory per week.

Prerequisites: SC 121-122 or SC 251-252 and instructor's permission.

Theory and practice of photographic image formation and recording. Lecture, demonstration, and laboratory experience. Photography and documentation of natural objects, organisms, and artifacts of biological, medical, pathological, and forensic interest. Photomicroscopic, ultra-violet, infra-red, color, and black and white techniques.

Laboratory Fee: $18.00.

SC 510 General Environmental Health.
Credit, 3 semester hours.

Prerequisites: SC 122, SC 123 or SC 251; SC 301 or SC 302; and CH 106.

Communicable diseases and their spread and control; environmental factors affecting public health, applications of the principles of sanitation and health to the solution of environmental problems. Population trends and the collection and evaluation of statistics concerned with public health. Various aspects of preventive medicine.

SC 513 Air Pollutants w/Lab.
Credit, 4 semester hours.

Prerequisites: CH 104-108; CH 201; SC 301 or SC 302; SC 361-362.

Physical, chemical, and biological properties and sources of the major air pollutants. New and older methods of sampling, identification, and measurement are presented.

Laboratory Fee: $18.00.

SC 514 Air Quality Control and Management w/Lab.
Credit, 4 semester hours.

Prerequisite: SC 513 (can be taken concurrently).

Historical presentation and definition of air pollution problems. Approaches for abatement and presentation and the strategy to achieve objectives of air quality that meet regional standards.

Laboratory Fee: $18.00.

SC 515 Biophysics I w/Lab.
Credit, 4 semester hours.

Prerequisites: CH 106; SC 362; PH 104-106; M 116.

Principles and properties of large and small molecules in solutions, particularly in body fluids. Physical laws and theories of gases, liquids, and solutions. Thermal chemistry and reaction rates as related to biological systems.

Laboratory Fee: $18.00.

SC 516 Biophysics II w/Lab.
Credit, 4 semester hours.

Prerequisites: CH 106; SC 362; PH 104-106; M 116.

Physical laws and theories as related to muscle, skeletal, sense organ, nerve and other physiological actions.

Laboratory Fee: $18.00.

SC 517-518 Bio-Techniques.
Credit, 6 semester hours.

Prerequisites: Biology major and permission of instructor.

Clinical and research techniques used in the biological sciences. Advanced microscopy, photomicroscopy, cell and tissue culturation, clinical techniques, and instrumental procedures.

Laboratory Fee: $18.00 per semester.

SC 519 Pharmacology w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 122 or SC 123 and SC 132; or SC 251-252; SC 361 or CH 302.

Science of medicinals and other chemicals and their effects produced by use and abuse on living organisms, the mechanisms whereby these effects are produced. Relation of structure to activity methods of assay, and metabolic pathways involved.

Laboratory Fee: $18.00.

SC 521 Toxicology w/Lab.
Credit, 4 semester hours.

Prerequisites: SC 122 or SC 123 and SC 132, or SC 251-252; SC 361 or CH 302.

The action of chemicals, particularly poisons, on living organisms. Relation of structure to activity, mechanisms of detoxication (in vivo), and reason for activity studied. Methods of isolation, identification and characterization from tissues, toxic limits, methods of assay, types of antidotes used.

Laboratory Fee: $18.00.

SC 524 Psychobiology.
Credit, 3 semester hours.

Prerequisites: P 111, SC 122 or 123, SC 132, and CH 106.

A study of the biological factors of behavior, with concepts drawn from numerous related disciplines, such as physiology, pharmacology, ethnology, ecology, anthropology, psychology, and biochemistry. One of the more recent advances in this field is that of the environmental impact on behavior patterns.

SC 561-562 Advanced Biochemistry.
Credit, 6 semester hours.

Prerequisite: SC 362.

Enzymology and the more important metabolic pathways, including those of alkaloid synthesis. Physiological results due to various enzymatic reactions.

SC 591-592 Seminar and Senior Thesis.
Credit, 2 semester hours.

Prerequisites: Biology major in 3rd or 4th year.

Hourly weekly meetings during which prepared papers are read by members of the class. Each student, with his adviser, must select a topic which from library sources is developed into a "Library Thesis." The contents of this thesis must be defended before department faculty members.

SC 595-596 Laboratory Research.
Credit, 1-6 semester hours.

Prerequisites: Biology major. Permission of the department.

Choice of a research topic, literature search, planning of experiments, experimentation, and correlation of results in a written report, under the guidance of a department faculty member.

Laboratory Fee: $18.00 per semester.

SC 599 **Independent Study.**
Credit, 1-3 semester hours, maximum of 6.
Prerequisites: Biology major. Permission of the department.
Laboratory Fee: $5.00 per credit hour.

SOCIOLOGY AND SOCIAL WELFARE

Faith H. Eikaas, Chairman

SO 113 **Sociology.**
Credit, 3 semester hours.
The role of culture in society, the person, and personality; groups and group behavior; institutions; social interaction and social change.

SO 114 **Contemporary Social Problems.**
Credit, 3 semester hours.
Prerequisite: SO 113.
The major problems which confront the present social order, and the methods now in practice or being considered for dealing with these problems.

SO 124 **Political and Social Thought of the Third World.**
Credit, 3 semester hours. (Same as PS 164).
The emergence of the Third World as a decisive force in world political, social, economic, and cultural thought.

SO 218 **The Community.**
Credit, 3 semester hours.
Prerequisite: SO 113.
The Community and its provision for health education, recreation, safety, and welfare—theoretical concepts of "Community" plus case studies of small scale human communities used to introduce students to fundamental concepts of "Community"—ethnographies include studies of factories, hospitals, primitive villages, small towns, etc.

SO 221 **Cultural Anthropology.**
Credit, 3 semester hours.
A systematic survey of the customs of man found in preliterate societies as well as modern societies. A study of the evolution of culture and analyses of religion, economics, language, kinship, art, etc. as found in primitive and modern cultures.

SO 231 **Juvenile Delinquency.**
Credit, 3 semester hours. (Same as CJ 221)
Prerequisites: SO 113 and P 111.
An analysis of delinquent behavior in American society; examination of the theories and social correlates of delinquency, and the socio-legal processes and apparatus for dealing with juvenile delinquency.

SO 250 **Research Methods.**
Credit, 3 semester hours.
Prerequisite: P 301, BA 216 or permission of instructor.
The student develops the concepts necessary for selection and formulation of research problems in social science, research design and techniques, analysis and interpretation of research data.

SO 310 **Primary Group Interaction.**
Credit, 3 semester hours.
Prerequisite: SO 113.
Exploration of communication in group process, building a group and analyzing group structure and interaction; the ways people communicate emotionally and intellectually.

SO 311 **Criminology.**
Credit, 3 semester hours. (Same as CJ 311)
Prerequisites: P 111 and SO 113.
An introduction to the principles and concepts of Criminology: analysis of the social context of criminal behavior, including a review of criminological theory, the nature and distribution of crime, the sociology of criminal law, and the societal reactions to crime and criminals.

SO 312 **Marriage and the Family.**
Credit, 3 semester hours.
Prerequisite: SO 113.
The structure and function of the family in American Society: analysis of social relations within the institution. Factors contributing to its successful functioning, and those leading to alienation and social disorganization.

SO 315 **Social Change.**
Credit, 3 semester hours.
Prerequisite: SO 113.
Sources, patterns, and processes of social change with examination of classical and modern theories of major trends and developments as well as studies of perspectives on micro levels of change in modern society.

SO 318 Political Sociology.
Credit, 3 semester hours.
Prerequisite: SO 113. (Offered even years, spring semester)
(Same as PS 318)
Concepts, theories, and basic issues in the sociological analysis of political systems, social factors in political attitudes and behavior with emphasis on understanding the functional and dysfunctional aspects of socio-political coordination and conflict.

SO 320 Social Psychology.
Credit, 3 semester hours. (Same as P 321)
Prerequisites: P 111 and SO 113.
The interdependence of social organizations and behavior. The interrelationships between role systems and personality; attitude analysis, development, and modification; group interaction analysis; social conformity; social class and human behavior.

SO 321 Social Stratification.
Credit, 3 semester hours.
Prerequisite: SO 113.
Organization of social class: status, power, and process of social mobility in contemporary society. Social stratification, its functions and dysfunctions, as it relates to the distribution of opportunity, privilege, and power in an industrial society.

SO 322 Sociology of Education.
Credit, 3 semester hours.
The effects of education on American society: the organizational structure of educational systems at the primary, secondary and university levels with major emphasis on the interactive roles of students, teachers and administrators—particular concern with the relationship between education and socio-economic status and with problems of organizational change in the American school system.

SO 331 Population Problems and Human Ecology.
Credit, 3 semester hours.
Prerequisite: SO 113, or consent of instructor. Offered odd years, spring.
A sociological approach to social demography with attention given to population statistics found in U. S. Census reports and vital statistics reports. The quantitative patterns of distribution of population, and population changes and trends.

SO 340 Medical Sociology.
Credit, 3 semester hours.
Prerequisite: SO 113 or permission of the instructor. Offered even years, spring.
An analysis of one of our major social institutions, the health care field. Emphasis will be placed on the socio-cultural aspects of the field; a general overview of the organization and delivery of health care services and the current problems and issues.

SO 390 Sociology of Organizations.
Credit, 3 semester hours.
Prerequisite: SO 113 or permission of the instructor. Offered even years, spring.
Classical sociological theories of organization with emphasis on the concepts of bureaucracy, scientific management, human relations and decision making theory. The relevance of these ideas to concrete organizational contexts, e.g., civil service, business, social movements and political parties, charitable institutions, hospitals, etc.

SO 400 Minority Group Relations.
Credit, 3 semester hours.
Prerequisites: SO 113.
An interdisciplinary survey of minority groups in this country with particular attention paid to those ethnic, religious, and racial factors that influence interaction. Designed to promote an understanding of sub-group cultures.

SO 410 Urban Sociology.
Credit, 3 semester hours.
Prerequisite: SO 113.
The problems of the cities. Residential patterns together with the physical development of cities and redevelopment plans. An examination of groups of people and their environment and the relationship between the two.

SO 411 Industrial Relations.
Credit, 3 semester hours. (Same as BA 231)
Prerequisite: Permission of the instructor and Sociology Chairman.
Human factors in the management function including union-management relations, history of human relations, individual and group productivity, the company, and the community.

SO 413 Foundations of Sociological Theory.
Credit, 3 semester hours.
Prerequisite: Nine hours in Sociology.
An analysis of the development of sociology in the nineteenth century with particular emphasis on the theories of Comte, Durkheim, Simmel, Weber, Marx, de Tocqueville, and others.

SO 414 Sociology of Occupations and Professions.
Credit, 3 semester hours.
Prerequisite: SO 113 or permission of the instructor.
A sociological analysis of the division of labor, occupational groupings, career patterns and professional associations in modern society.

SO 418 Public Opinion and Social Pressure.
Credit, 3 semester hours. (Same as PS 418)
Prerequisites: SO 113, P 111 (offered even years, fall semester).
An intensive analysis of the nature and development of public opinion with particular consideration of the roles, both actual and potential, of communication and influence.

SO 440 Undergraduate Seminar.
Credit, 3 semester hours.

Prerequisite: 21 semester hours in Sociology.
Required of Sociology majors. A detailed examination of selected topics in the field of sociology and a critical analysis of pertinent theories with emphasis on modern social thought.

SO 450 Research Seminar.
Credit, 3 semester hours.

Prerequisites: P 301 or BA 216 Statistics.
The student develops and carries out an original research project in social science, reporting his procedure to the class.

SO 599 Independent Study.
Credit, 1-3 semester hours per semester with a maximum of 12.

Prerequisites: Consent of faculty member and chairman of department. Opportunity for the student under the direction of a faculty member to explore an area of interest to him. This course must be initiated by the student.

SOCIAL WELFARE CONCENTRATION

Richard C. Foley, Acting Coordinator

The following courses, with the exception of SW 425, must be taken by all social work students in order to achieve recognition as a professional at the bachelor's degree level.

SW 220 Introduction to Social Welfare.
Credit, 3 semester hours.

Prerequisite: SO 113.
Organizations in the community and the problems that they face. How these organizations developed, how they function, and how they utilize social workers. Ways of dealing with community problems. Field trips to organizations serving the New Haven area. Basic observational skills will also be taught.

SW 340 Human Dynamics.
Credit, 3 semester hours.

Prerequisite: SO 113.
Phases of psychosexual development, together with the problems that develop in each stage. The psychosocial history and its interpretation. Group dynamics and the meaning of group interaction.

SW 350-351 Social Welfare as a Social Institution I and II.
Credit, 6 semester hours.

Prerequisite: SW 220. Credit for one semester only with permission of Coordinator.
The relationships between the present social welfare system and the socio-economic and political systems of the United States. The history of the concepts of social welfare, the current programs, policies, and issues.

SW 401-402 Field Instruction I and II.
Credit, 6 semester hours.

Registration only by permission of the Coordinator of Social Welfare. Prerequisite or concurrent SW 415-416. Credit for one semester only with permission of Coordinator.
Direct service activities in a social work agency in the community to further the development of the skills needed for the practice of social work. Field instruction is individually planned with each student. Seminars in conjunction with the field work experience provide an opportunity for an understanding of group and individual dynamics.

SW 415-416 Methods of Intervention I and II.
Credit, 6 semester hours.

Prerequisites: SW 350-351.
The skills needed for the practice of social work. How to approach a situation in a professional manner. How to understand a situation, set goals, and initiate and carry out a program to meet these goals. Case records are studied to familiarize the student with real life situations in which to apply the methods of intervention. Through role playing the students will develop their skill in talking to and listening to others. Emphatic ability is developed.

SW 425 (elective) Race Relations.
Credit, 3 semester hours.

Prerequisites: SW 215 or SO 113.
The student begins to deal with his own attitudes towards minority groups. He is helped to understand these attitudes and then to work with them in a program of reading and activity in the University and community.

SW 475 Issues in Social Work.
Credit, 3 semester hours.

Prerequisite: SW 401.
Students explore their views on the role of social work in today's society, the ethical considerations faced by the profession, and the students' place in the profession and in society.

SW 599 Independent Study.
Credit, 1-3 semester hours per semester with a maximum of 12.

Prerequisites: Consent of faculty member and chairman of department. Opportunity for the student under the direction of a faculty member to explore an area of interest to him. This course must be initiated by the student.

THEATER ARTS John Collinson, Coordinator

T 131-132
Introduction to the Theater.
Credit, 6 semester hours.

Using the theater resources of the New Haven area, students will study topics such as playwriting, directing, acting, set design, dramatic criticism. Students must pay theater admissions.

T 141-142
World Drama and Theater.
Credit, 6 semester hours.

Dramatic literature from classical times to the present, considered in its contemporary theatrical setting.

T 341-342
Acting and Directing.
Credit, 6 semester hours.

Exercises in acting and directing, moving from the elementary to the complex. Emphasis on acting during the first semester and directing during the second. The student may participate in major workshop productions.

T 491-492
Theater Arts Seminar.
Credit, 6 semester hours.

Prerequisites: T 131-132, T 141-142, T 341-342 or Instructor's consent. Independent study in special areas of drama: theater history, dramatic literature, criticism, playwriting, directing, acting.

T 599
Independent Study.
Credit, 1-3 semester hours per semester with a maximum of 12.

Prerequisites: Consent of faculty member and chairman of department. Opportunity for the student under the direction of a faculty member to explore an area of interest to him. This course must be initiated by the student.

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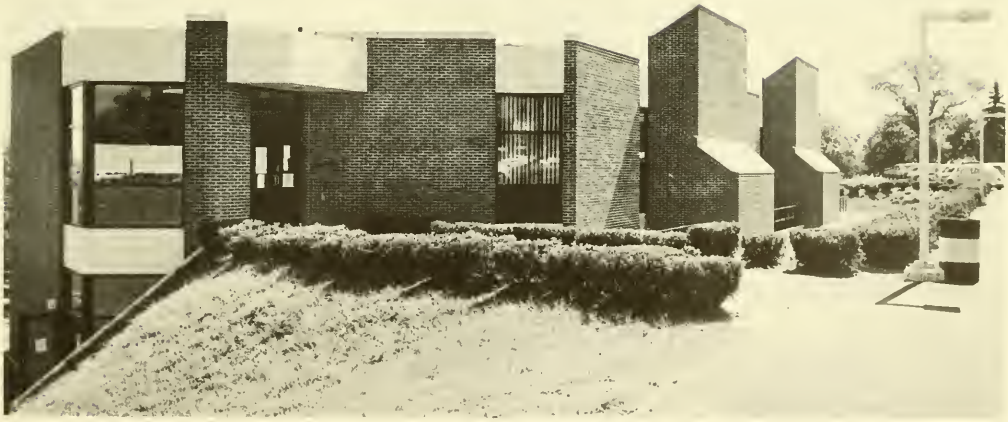

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MAIN ROUTES TO THE
UNIVERSITY OF NEW HAVEN
FROM WATERBURY
FROM MERIDEN
FROM NEW YORK
FROM BRIDGEPORT
FROM NEW YORK
15
91
95
95
UNIVERSITY OF NEW HAVEN
EXIT 59 NORTH & SOUTH
EXIT 57 SOUTH
EXIT 59 NORTH
EXIT 42 EAST
EXIT 43 WEST
LEGEND
Heavy lines mark best routes to the campus

UNIVERSITY OF NEW HAVEN

West Haven, Connecticut 06516

APPLICATION FOR ADMISSION – DAY DIVISION

(PRINT OR TYPE)

Date ..... 19 Male Female ..... Sel. Serv. No. [ ]

Name ..... Soc. Sec. No. [ ] [ ] [ ] [ ]
Last First Middle

Address ..... Tel. No. ...
No. Street City State Zip Code

Birthplace ..... Age Date of Birth
City State Country

For what program are you applying? ..... Country of Citizenship

Are you applying for: ☐ Fall ☐ Spring ☐ Summer (June) ☐ (July) Year

For information concerning dormitory or off campus housing, contact the Director of Housing.

How did you learn about the University of New Haven?

List High Schools and All Colleges Attended	Location (City & State)	H. S. Course and/or College Major	Dates Attended	Graduate? or Degree
1			19 to 19	
2			19 to 19	
3			19 to 19	
4			19 to 19	

NOTE: Failure to list all colleges previously attended constitutes grounds for dismissal.

Your choice of means for satisfying the admissions tests (Check one):
☐ CEEB Scholastic Aptitude Test ☐ American College Testing Program Tests
☐ University of New Haven Tests (Note: Contact University for testing dates.)

INSTRUCTIONS FOR APPLICANTS

Applications may be accepted from high school graduates, seniors anticipating graduation, and students transferring from another college with satisfactory grades.

Necessary for a completed application for admittance are:

Receipt of the completed application form with application fee payment of $15.00.

Receipt by the University of applicable high school transcripts and admission test scores. Transfer students must submit college transcripts also. It is the student's responsibility to arrange for having these transcripts sent to the University.

NOTE—University of New Haven welcomes the applications of students from all geographic areas, from public or private schools, and from all races, economic levels and religions.

Repeat full name
(Last) (First) (Middle)

If married, give wife's maiden name or husband's name Number of Children—if any

Military Service: Branch Rank Dates of Service

Do you plan to apply for Financial Aid?

Working experience: Employer City Dates Type of Work

(list present or last job first)

Father's name Education Living?

Occupation Place of occupation

Mother's name Education Living?

Occupation Place of occupation

No. of sisters No. of brothers

Living with mother and father? Yes No If not, list name and address of parent or guardian with whom you live—

Name

Address
(Number) (Street) (City) (State) (Zip)

After an applicant has been otherwise accepted, he must have a physical examination by his own physician. The University provides the medical form for the physician. The University reserves the right to reject an applicant whose physical examination indicates the necessity of limitations in study.

CERTIFICATE TO BE SIGNED BY APPLICANT AND PARENT, GUARDIAN, OR SPONSOR OF MINORS

In consideration of the undertaking by the Admissions Office to process this form, the undersigned agree that the information furnished on this Application for Admission form, together with all information and materials of any kind received by the Admissions Office from any source, or prepared by anyone at its request, shall be completely confidential and shall not be disclosed to anyone, including the candidate and his family, except that the Director of Admissions may, for official purposes, in his discretion disclose any part or all thereof to such person or persons as he deems advisable.

I hereby approve the above application and I guarantee the payment of all financial obligations incurred by the applicant. I further agree and authorize the University of New Haven to publish for public relations purposes my photograph or photograph(s) in which I appear. I also further agree to support the administration in upholding the rules and regulations of the University and in maintaining high standards in all phases of university life.

° If applicant is under 18, the applicant and a parent should sign.

Applicant's Signature Date

Parent's Signature (Or Guardian's Signature)

Father Date

Mother Date

Guardian Date

UNIVERSITY OF NEW HAVEN

West Haven, Connecticut 06516

APPLICATION FOR ADMISSION – DAY DIVISION

(PRINT OR TYPE)

Date ..... 19 Male Female Sel. Serv. No. | | | | | | | | | |

Name ..... Soc. Sec. No. | | | | | | | | | |
Last First Middle

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No. Street City State Zip Code

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Occupation Place of occupation

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Mother Date

Guardian Date

UNIVERSITY OF NEW HAVEN
CONNECTICUT

UNIVERSITY OF NEW HAVEN, WEST HAVEN, CONNECTICUT 06516